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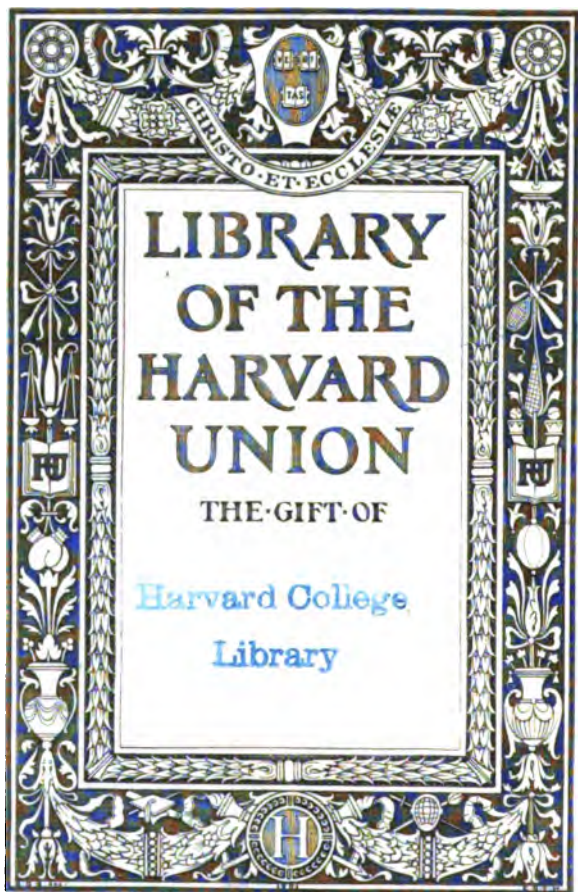
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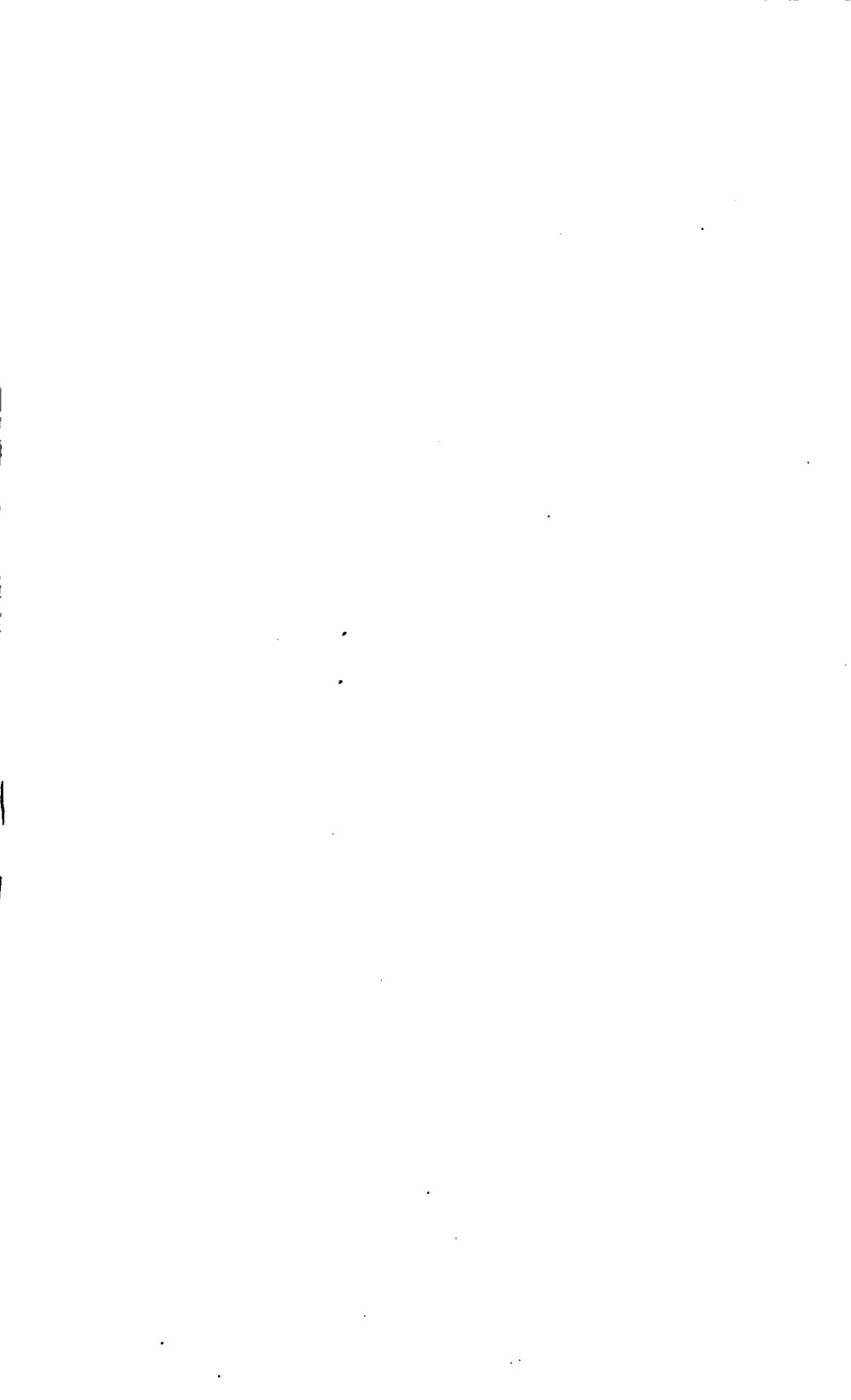


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[Whole Number 176]

BUREAU OF EDUCATION
CIRCULAR OF INFORMATION NO. 6, 1891

CONTRIBUTIONS TO AMERICAN EDUCATIONAL HISTORY
EDITED BY HERBERT B ADAMS

No. 13

HISTORY OF HIGHER EDUCATION

IN

MASSACHUSETTS

BY

GEORGE GARY BUSH, Ph. D.

WASHINGTON
GOVERNMENT PRINTING OFFICE
1891



HARVARD HALL

UNIVERSITY HALL

GORE HALL

MASSACHUSETTS HALL

HARVARD COLLEGE—MAIN ENTRANCE TO COLLEGE YARD

[Whole Number 176]

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Mar. 2, 1937

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, D. C., October 1, 1891.

SIR: The present series of "Contributions to American Educational History" is the outgrowth of an organized inquiry concerning the study of history in American colleges and universities, instituted as early as 1885 by my predecessor, Gen. John Eaton. Prof. Herbert B. Adams, of the Johns Hopkins University, was by him engaged for the conduct of this investigation, the results of which were published in 1887 as a circular of information of this Bureau, under the direction of my immediate predecessor, Col. N. H. R. Dawson. In connection with this organized inquiry Dr. Adams discovered fields of special educational interest in the history of William and Mary College and of the University of Virginia, upon which institutions monographs were published by the Bureau of Education in 1887 and 1888, together with authorized sketches of Hampden-Sidney, Randolph-Macon, Emory-Henry, Roanoke, and Richmond Colleges, Washington and Lee University, and the Virginia Military Institute. These studies of higher education in Virginia, encouraged by my predecessor, led to a series of contributions on the History of American Colleges and Universities, grouped by States and written, so far as practicable, by representatives of the institutions considered, or by educational specialists. Histories of Education in North Carolina, South Carolina, Georgia, Florida, Alabama, Wisconsin, Indiana, Michigan, Ohio, and of Federal and State Aid to Higher Education in the United States, have already been published by the Bureau of Education, and have proved very helpful and suggestive not only to teachers in the States concerned, but to educators throughout this country and in foreign lands. Correspondents in various European countries, and even in Asia, have recognized the value of this series. I desire to complete it in time for exhibition at the World's Columbian Exposition in 1893. A coöperative history of American higher education, with due regard to common and secondary schools, would be a noble and worthy contribution from this Bureau to the United States Government exhibit.

I have elsewhere commented upon the significance and value of this series of publications, as follows: National education does not begin, as is sometimes supposed, with primary education, but with higher education. The first education was that of the princes and the clergy. Finally, the diffusion of the democratic ideas contained in Christianity makes education a gift to all men. The history of higher education in the several States affords the needed clew to the beginning of our present widely extended system of common schools. The publication of that history by this Bureau is having an excellent practical effect for

good, for it is doing much to secure the necessary coöperation of the large body of highly cultured and influential men who hold in their hands the education of colleges and universities, and who are, by the very nature of the work they have in hand, somewhat skeptical in regard to the usefulness of higher institutions or bureaus that are directly controlled by the State or National Governments, it being supposed that party politics makes such governmental control uncertain in its policy and liable to be influenced by other than disinterested motives. There has been noticed, especially in the South, the appearance of a much increased interest in educational history as a consequence of the publication of these State monographs. This interest has shown itself in other historical contributions, published in newspapers and periodicals and in the form of pamphlets and volumes. There has never before been so much spirit of coöperation with this Bureau as now.

The accompanying monograph was prepared by Prof. George Gary Bush, of Quincy, Massachusetts, author of the *Early History of Harvard University*, published by Cupples, Upham, & Co., of Boston, on the occasion of the two hundred and fiftieth anniversary of the founding of that institution. A complete history of Harvard University has been written by him for this monograph. He is also the author of various papers published in the Boston magazine called *Education*, on "The Origin of the First German Universities," March, May, and July, 1884, and of essays on "The First Common Schools of New England," March and May, 1885. Professor Bush pursued graduate studies at Heidelberg University in the years 1875-77, and was for some time professor of Latin in Montpelier Seminary and in Middlebury College, Vermont. On account of his educational studies in Germany and in the United States he was engaged by the editor of these "contributions" for the preparation of monographs on the History of Higher Education in Florida, where Professor Bush resides in the winter season, and on the History of Higher Education in Massachusetts, where he spends the summer in original research.

The feature of special historical and educational interest to be noted in this monograph is that the Puritan of Massachusetts Bay was well fitted to be the pioneer of a great educational movement, such as has since been developed on this continent. Of strong religious convictions and by nature a theologian, he set a very high value upon learning and a learned ministry. Hence his first thought was to found a Christian college.

The history of Harvard College follows. Beginning with the early struggles of its friends and their heroic efforts to sustain it, the history is traced through more than two hundred and fifty years, until it stands forth a great university. It is shown that, from the middle of the seventeenth century, until near the close of the colonial period, Harvard was the center of the intellectual life of by far the greater part of New England. The growth of the college not only kept pace with the growth and prosperity of the country, but it furnished the trained minds which

made that prosperity possible. As the eighteenth century advanced, some of Harvard's sons became men of science and some were preparing themselves to be the standard-bearers of the Revolution. The loyalty of the educated men of New England became the strong arm of the northern colonies in 1776.

With the opening of the nineteenth century a new educational era begins, characterized especially by greater freedom of belief and practice. The expansion of the college and its work follows. New professorships are established; various schools and departments opened; there is a broadening of the courses of instruction, and an improvement in the methods of teaching.

A view is given of college life as it exists to-day, showing the formative influences that are to shape the character of those who enjoy college advantages. With a brief history of the presidents the account of Harvard closes.

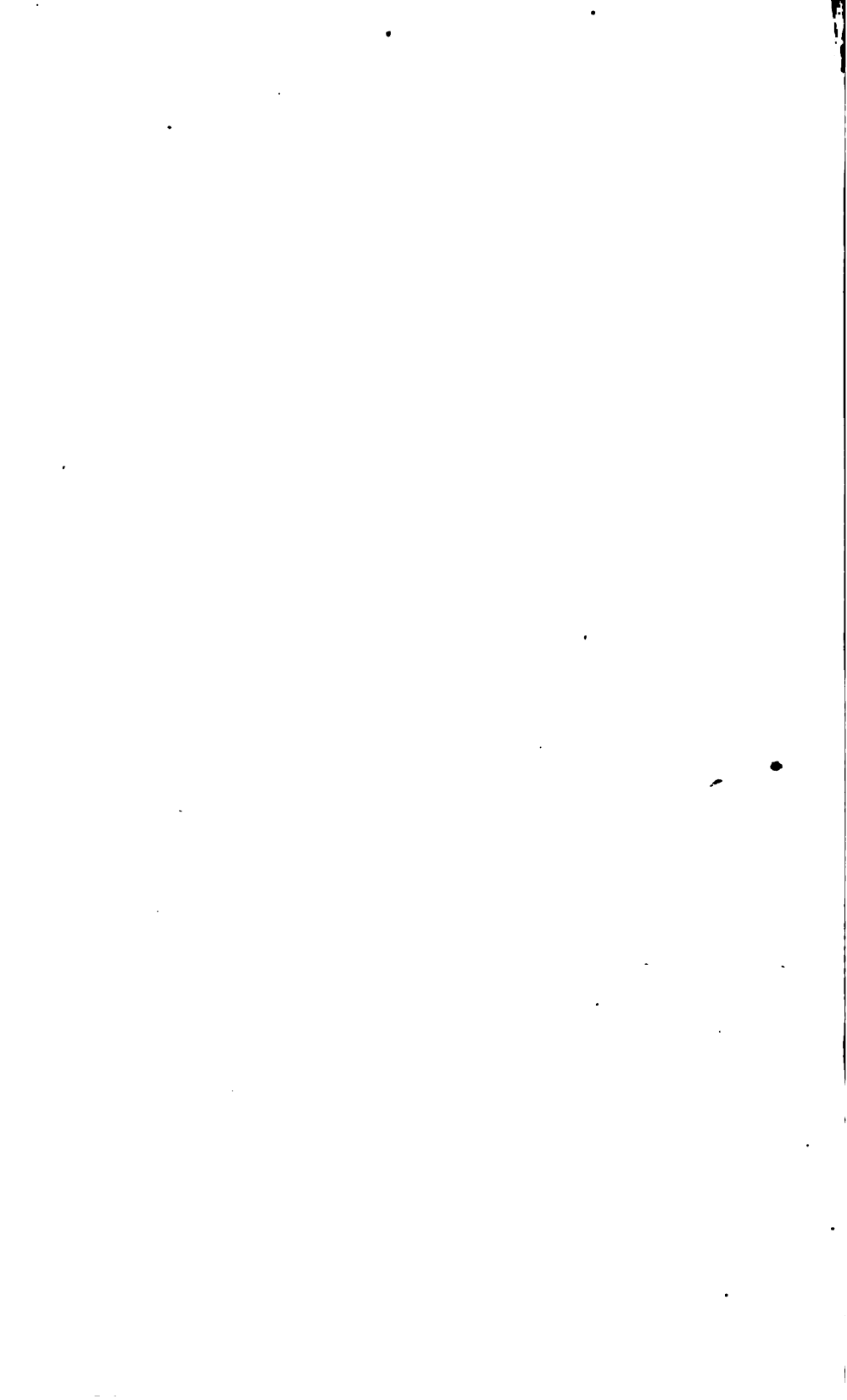
The remainder of the monograph contains historical sketches of each of the higher educational institutions of Massachusetts, giving a readable account of their establishment, the work they have accomplished, their endowments, appliances, and buildings, the courses of study and quality of instruction, the number of students, expenses, and the like. An excellent statement is made of the advantages offered in Massachusetts for the education of women. Full accounts are also given of the work done in the Massachusetts Institute of Technology. These sketches appear as separate chapters.

I am confident that this monograph will prove of great interest and of positive educational value not only to teachers and students, but to all good citizens throughout the country who are friends of the higher education of the American people. I have therefore caused it to be published as a circular of information of this Bureau.

I have the honor to be, sir, very respectfully,

W. T. HARRIS,
Commissioner

Hon. JOHN W. NOBLE,
Secretary of the Interior.



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HISTORY OF HIGHER EDUCATION IN MASSACHUSETTS.

CHAPTER I.

INTRODUCTORY.—THE GROWTH OF THE UNIVERSITY IDEA.

The earliest form of government in the Massachusetts Colony was a theocracy. The founders of this colony were lovers of learning, but they had come to look upon it principally as an aid to a religious life, and hence the first object sought in the establishment of a college was the study of theology. From this starting point and upon this basis began the development of New England institutions. During the first century after the landing of the Puritans in the New World, theology was (1) the axis on which society and politics revolved, and (2) the measure by which social and economic questions were gauged. With the development of society, the growth of independence, the enlargement of the population, and the increase of wealth, the social encroached more and more upon the domain of the theological. Soon after the opening of the present century this departure from the earlier order of society began to manifest itself in matters of education by establishing (1) schools of theology, law, and medicine, (2) colleges teaching science, philosophy, letters, art, and industrial branches of knowledge. During the greater portion of the period that has since intervened although educational progress has been slow, no one can doubt that it has been real and permanent. Its leaders have often been groping in the dark amid unreal substances, but the secret key that opened the door into the chamber of light has invariably rewarded their patient search. The advance in methods of instruction and in scientific knowledge which has characterized the last 20 years is scarcely less marvelous than the inventions and discoveries which are accredited to this period. And, though the question as to what constitutes the true university has not been solved, it is evident that it is in a fairer way of settlement than at any preceding period in our history. Science and learning are now looked upon as an independent interest of the community, and neither religious sects nor political parties materially affect the condition and prospects of the higher education.

If we look to see what the university idea was in the early schools of Europe, we find that it was expressed by the term *studium generale*, which, as originally used, referred "to the extent of the scope of opera-

tion of these institutions, which were intended for pupils of all countries." According to Professor Laurie, it was "a school for liberal studies, and a school open to all." Though the word *universitas* came to be used later as equivalent to *studium generale*, its earliest use was to denote any association of persons forming a somewhat permanent bond of union. In harmony, therefore, with the etymological as well as the applied meaning of the term, it was held that the true definition of a university was a body of teachers and pupils animated by the right spirit and united together in their search for knowledge.

The work of such a university appealed to the scientific spirit. It demanded a certain degree of freedom of choice on the pupil's part as to what and how far he would study, and freedom in the pursuit of science.

Going back, therefore, to the origin of the idea, we should not be far wrong in agreeing with him who says that the true end of the university is "the highest scientific culture of the individual, and its peculiar method is the most intelligent and highly trained freedom in research, in teaching, and in learning." Or, in other words, there must be freedom to choose, the highest scientific culture of the individual, and the right association of the instructor and pupil.

While the scope of instruction should be comprehensive, it is not to be supposed that it should include all subjects; the true university is not to be understood as a place "where anybody can come to learn anything that can be taught anywhere."

How nearly then, may we ask, does the American university approach to the standard which has been set for the true university? Some one may object that we have as yet no strictly "American university," or at least that no one can tell what the type of the American university is. Truly, up to within a very brief period we have had nothing higher than the American college, to which had been added one or more professional schools.

Without any well-defined system of university studies the curriculum has been constantly changing. Wanting a stable equilibrium there can be no certainty that the pendulum will continue to swing the same way or with the same momentum. There is apparently the conviction that the future of education in this country is to be determined by the manner in which this question of a fixed system of university education is settled. We have excellent material for its development. We have colleges and professional schools and other institutions devoted to the higher education, and it is quite evident that these are giving to the average pupil an education superior to that afforded to any but honorem in the universities of Great Britain. No longer is that training thought sufficient which fits men simply for the four professions of preaching, teaching, medicine, and law.

One fact is self-evident, that "the American university must be developed on its own soil and out of the existing materials and under the

existing conditions." It is not a product that will bear importation even if it is admitted free of duty.

We demand of the American university that its scope shall be two-fold; "to instruct the few and enlighten the many, to stimulate and elevate all classes of society;" that as we are a religious people our universities shall represent the best religious thought of our time, and reflect the deepest spiritual convictions of American society; that as there can be no permanent national prosperity without the inculcation of patriotic sentiment it should be the duty of the university to create a true civic spirit. Though the sentiments of loyalty to country should be among the earliest teachings of childhood, yet to form the highest type of citizenship the lessons of the home must be supplemented by the systematic and broader ones of the college and the university; that in connection with the study of civics some knowledge of statecraft should also be included in the curriculum of studies. Literature and history are pleasant and familiar words, and yet until within recent years how little time has been devoted to them even in our best schools. If, as it is claimed, the study of the best literature serves to "form and glorify" the highest ideal of human life; if it "broadens thought, kindles faith, sets the soul free, quickens and greatens as nothing else can," and so lets us into the temple of the past that we see

"The glory that was Greece, the grandeur that was Rome,"

what else should receive greater attention than this? The whole field of historical study, accompanied by special examination and some critical analysis, should be gone over during the period devoted to secondary education, and leave to the university to discover to each one the universal laws which govern in the affairs of individuals and nations; that is, by the investigation of facts and the establishment of results a sure basis should be formed out of which a philosophy of history may be evolved.

The origin and growth of language should receive much more attention in our university course than it has hitherto. On the other hand the facilities for learning the modern languages have greatly improved within the past two decades, so that a college man is not thought to be well educated to-day unless he has some command of two or more spoken languages. Still, the study of the modern languages to the neglect of Latin and Greek is in no essential respect a gain. The former certainly contain much of thought and knowledge, and the disciplinary results which follow the methods now coming into use among the teachers of such languages as the French and German are by no means small, yet it may be doubted whether they are fair substitutes for the ancient languages, especially of the Latin which furnishes the skeleton grammar from which all modern grammars are developments. The proper use of our own language, that is, the study of rhetoric, writing, and speaking, is receiving much attention, and it is the duty of the university in common with the lower schools to see to it that the educated American of

the future does not reflect discredit upon his country and the thoroughness of her system of education by gross inaccuracies of language. As the student throughout his course is striving to learn how he may best express his thoughts, so it is unjust to assign to language any other than the most important place in education. The art of utterance, it has been said, "is a twin if not one with the art of thinking. Words are not empty; living words are always 'loaded' even in the dictionary."

The subject of the fine arts has long received marked attention in the more educated countries of Europe, and the result to-day is seen in the fact that sometimes the veriest peasant of these lands has a more critical taste than the university graduate of America. This department of study, due doubtless in part to the lack of ancient or even modern objects of art in our country, was long neglected to the great detriment of our people, but it is now receiving increased attention, and its study should receive in the university of the future a place in no wise inferior to that accorded to language, history, or philosophy.

The advance made in the study of the natural sciences during the past thirty years has been most noteworthy, and in no other department of college instruction does the revolution which has been effected seem to the graduates of a generation ago of greater magnitude or freighted with greater blessings to individual students. The increased attention given to these studies has doubtless had the tendency to diminish somewhat the interest taken in metaphysics and mathematics. Without question many of the secondary schools now offer better advantages for the pursuit of scientific studies than was offered by the average college or university in 1860.

Of late, advanced political studies are receiving much attention in the leading American universities. Post-graduate courses of instruction are established, and the best facilities placed within the reach of our students of political and social science, and of any who are interested in the investigation of those important questions which relate to matters of finance or political economy.

The Johns Hopkins University stands foremost among these, and, especially in respect to applying the scientific method to the study of history and social and economic questions, she has done more than all other American institutions. Harvard University and Columbia College have also been earnest workers in this same field, and the Journal of Economics of the former and the Journal of Political Science published by the latter have given to political and allied studies such an important position in the advanced thought of our day, that already all the leading colleges and universities at least of New England no longer think of omitting them from their courses of instruction. Unquestionably the Clark University will soon prove itself an able and progressive factor in the work of advancing these broader studies which are the legitimate outgrowth of the present conditions of national thought.

With this review of the objects sought to be obtained by a university

education and a statement of the basis upon which this must be established in our country, we can not but take a just pride in the evidence we have that decade by decade our American universities are approaching nearer to the full measure of that service which we have a right to demand of them.

A most important question yet to be settled relates to the reorganization of our secondary education. Formerly our college was but a secondary school and now, although it has reached a higher stage of development, it can not satisfactorily reach the highest university stage until the indispensable prerequisite of a thoroughly systematic and uniform secondary education has been established. The graduate or "post-graduate" courses are at present unsatisfactory, and will remain so until the proper scope of the secondary education is determined and its relation to the university once for all established. Primary, secondary, and university education form a gradation, and are fully interdependent, and a principal reason why there is dissatisfaction with the secondary education is that the primary upon which it must be built is faulty, and to an extent inefficient. Another objection to our system of education as it exists to-day is that the secondary education in some of our best high schools, academies, and preparatory schools is superior to the secondary education received during a part of the so-called college or university course. Hence the need of a reorganization, so that the secondary education throughout its entire course shall be progressive; further, recognizing the link which exists between the development of the secondary education and the management of the college curriculum so that it shall develop into the university education, to separate college education as it now exists into the secondary and higher education of which it actually consists, and by combining the former of these with the secondary education furnished in our academic and preparatory schools, "gain a broad and solid foundation upon which to build the university education."

Our small colleges are doing excellent work, and by offering the advantages of extended courses of studies at a nominal cost they are gathering in some of the most worthy of our young men, who by reason of expense think themselves debarred from a university education. While a few of these colleges may develop into universities, doubtless the larger part will continue to do for some time to come essentially the same work as in the past; that is, they will mix the two kinds of education, the *training* and the *learning*. The former is properly the work of the academy, while it is said of the university, that it should be "a house of learning."

The question of college expenses, to which reference has just been made, enters as an important factor in estimating the future of higher education. During the last fifty years college expenses have increased in equal ratio with the intellectual character of our highest institutions

of learning. One has said that "you pay three times as much for tuition as you used to, and you get three times as much for your money."

If this is true, and the same ratio of increase is continued, what rare possibilities for culture, if he have the means to gratify it, await the student of the future. Doubtless it is true that a half century ago Harvard and the other colleges of Massachusetts were little better than high schools as compared with their development to-day, and the increased cost of the college course is no greater than is warranted by the superior facilities which are now offered for obtaining an education. The public demands that the standards which our universities set up shall be in no wise inferior to those which are found in the famous institutions of Europe. But it must be remembered that even to approximate gradually thereto, with the aspiration to surpass them eventually, requires vast outlays for proper equipments and the securing of the largest teaching resources the country affords.

Since the opening of college doors to women, and the rapid establishment of colleges exclusively for their use, the field of the higher education has been greatly enlarged. Still it will not do to hold that equal advantages are yet offered to both sexes. The colleges which afford a preliminary training to women must, on account of their poverty, bid the latter pause at the very entrance to that highway of learning which is open to men. What college for women offers advantages for original work at all to be compared with those which Harvard, Johns Hopkins, and the Clark University offer to scholarly men? It has been strongly asserted,¹ "that up to the present time there has never been in this country any opportunity worthy of mention for a scholarly woman, unless possessed of a private fortune, to conduct original investigations in any department of learning." There is need of special endowments, fellowships, and professorships, so that the most promising graduates from such colleges as Wellesley, Smith, and Mt. Holyoke, may not have their progress in science at once cut short, but rather be permitted to see opening before them the broadest fields of research into which they are cordially invited to enter. Mr. Boyesen, in discussing the types of American women in the November Forum (1889), makes the aspiring woman "the most distinctive character in American womanhood; a woman not handsome in features, but with resolute purpose and an ardent conscience." If this be well said, is she not simply the fit product of her country, her era, and her environment? And who would wish to have these aspirations quenched?

Sage College for women, at Cornell University, where the problem of coeducation is being satisfactorily solved, claims that its matriculates are making more rapid progress, and that they are reaching out "to a broader and more symmetrical life" than are the students at Wellesley and Smith Colleges; that, from crude girls at entering, they develop

¹ See committee's report at the annual meeting of the Collegiate Alumnae, held in Buffalo, N. Y., October, 1889.

before the close of the senior year "into self-possessed and thoroughly-trained women, who are ready to go out into the world and find their right place in it without fuss or difficulty."

If there is any reasonable basis for this claim of superiority on the part of Sage College, it behooves the Massachusetts colleges for women to ascertain in what it consists, and if it arises from methods, or an environment in no wise dependent upon the coeducation of the sexes, it would seem wise to adopt the Sage system without delay.

All things considered, have our colleges kept pace with the growth of the nation in intellectual and material resources? We can not answer this by a reference to the amount of instruction given, the number of hours of recitation or of lectures in a week, or even by what is higher, the quality or tone of the instruction. The answer must rather be found in the intellectual and moral character of our college graduates, since a college, like a tree, "should be and is known by its fruit." The proportion of those who pass through a college course grows smaller with each advancing decade. May not this be due to the increasingly high standard which the college sets, and be in reality an indication of progress? Between 1870 and 1880 the increase of students in twenty of our oldest leading colleges was less than $3\frac{1}{2}$ per cent. During the same period the population of the United States increased 23 per cent.¹

It is the belief of the writer that the Commonwealth of Massachusetts, upon whose soil were cradled America's first schools, which became the prototype of thousands of schools all over the land, and where the light of the higher sciences was first kindled by the munificence of John Harvard, is still one of the most trustworthy leaders in the education of the nation. The history of the colleges and universities, which is herewith presented, may indicate the measure of the advance that has been made during two and a half centuries, and help in the solution of the question as to what constitutes (in 1890) the American university.

G. G. B.

¹Professor Newton, of Oberlin.

CHAPTER II.¹

EARLY HISTORY OF HARVARD COLLEGE.

The fountain of living waters opened in the rock of the desert.—J. Q. ADAMS.

The prime, direct aim of education is "to enable a man to know himself and the world."—MATTHEW ARNOLD.

INTRODUCTION.

The first settlers in New England, recognizing the importance of a higher education than could be given in the common schools, began at once the founding of a university. The avowed object of this university was the training of young men for the ministry. Nothing could be clearer than the spirit of these early colonists. Though less than four thousand in number, and scattered along the shores of Massachusetts Bay, they were, nevertheless, able to engage in such an enterprise before adequate provision had been made for their material and spiritual wants. The importance, not only of mental cultivation but also of Christian

¹ In the following historical sketch of Harvard University the writer has attempted simply to present in a new and readable form a sufficiently complete, though condensed, statement of the important events connected with the founding and development of this the oldest of our American universities. The facts have been gathered from all sources accessible to him, the method of treatment and generally of statement being that part alone for which he holds himself responsible. If he has failed to give due weight to any important matters connected with the history of the various departments of the university, or accorded less praise for present and past accomplishments than the subject demands, no one can regret the fact more than he. If, on the other hand, he has in any respect overstated the service which the university has rendered or the advantages which it now offers, he acknowledges it as a mistake of judgment and not arising from any bias which might be charged to an alumnus of the university, a relation which he does not hold.

The writer acknowledges special indebtedness to many friends of Harvard who have recorded its history in magazine articles, monographs, public addresses, newspaper editorials, annual reports, and statements concerning special departments, and whose thoughts he has reproduced sometimes with but slight variation of the language in which they were written. Among these (in addition to the historians of the college, Peirce, Quincy, and Eliot) he would name Professors George H. Palmer, Josiah P. Cooke, N. S. Shaler, Charles Eliot Norton, C. C. Everett, C. F. Thwing, Barrett Wendell, and Horace E. Scudder, Henry C. Badger, E. S. Drone, and the authors of the College Book, the Harvard Book, and Harvard and its Surroundings. For many other sources from which valuable help has been secured he would refer the reader to the bibliography which follows the history of Harvard University, herewith presented.

learning, they had always valued in England, and as they built their homes across the sea it was with the determination "that if they succeeded at all it should be as well-instructed Christian men and not as mere conquerors of savages, or speculators in gold, or silver, or lands."

It was near the close of 1636, a little more than 6 years after the landing of the Puritans, when this first step was taken by the general court of the Massachusetts colony. At this assembly, presided over by Sir Henry Vane, governor of the colony, the general court agreed to give £400 (a munificent sum for the time) towards the founding of a school or college, but left the question of its location and building to be determined by the court that was to sit in September of the following year. This, it is said, was the first assembly "in which the people by their representatives ever gave their own money to found a place of education." At the next court it was decided to locate the college at Newtown, or "the New Towne," and twelve of the principal magistrates and ministers were chosen to carry out this design. A few months later they changed the name of the town to Cambridge, not only to tell their posterity whence they came but also, as Quincy aptly says, to indicate "the high destiny to which they intended the institution should aspire." Another year, however, passed before the college was organized. The impulse given to it then was due to aid which came from so unexpected a quarter that it must have seemed to the devout men of New England as a clear indication of the divine favor. The Rev. John Harvard, a Nonconformist minister, who was graduated in 1635 from the Puritan college of Emmanuel, at Cambridge, England, came in 1637 to America and settled in Charlestown, where he immediately took a prominent part in town affairs. His contemporaries gave him the title of reverend, and he is said to have officiated occasionally in Charlestown as "minister of God's word." One has recently said of him that he was "beloved and honored, a well-trained and accomplished scholar of the type then esteemed," and that in the brief period of his life in America—scarcely more than a year—he cemented more closely friendships that had been begun in earlier years.¹ The project of a college was then engrossing the thought of these early friends, and doubtless he also became greatly interested in it. Thus it happened that, when his health failed, through his own love of learning and through sympathy with the project of his daily associates, he determined to bequeath one-half of his estate, probably about £800, besides his excellent library of 320 volumes, towards the endowment of the college. This bequest rendered possible the immediate organization of the college, which went into operation "on the footing of the ancient institutions of Europe," and out of gratitude to Harvard the general court voted that the new institution should bear his name. Many tributes have been rendered by the sons of Harvard College to the memory of its founder, but neither the words of Everett nor

¹ For his genealogy and birthplace consult *New England and Genealogical Register* for July, 1885.

of John Quincy Adams seem so fitting as those of President Quincy when he says that the "noblest and the purest tribute to religion and science this western world has yet witnessed was made by John Harvard in 1638."

Some time in 1637 the beginning was made of this "school of the prophets," before which so important a history was to open. Its first master, Nathaniel Eaton, under whose oversight the college building was erected, soon showed himself unfitted for the execution of the task he had undertaken, and the work passed from his hands into the grasp of one who was to be not only the first but one of the best of American educators. This was the Rev. Henry Dunster, who was chosen to the office in August, 1640, and was the first to receive the title of president of Harvard College. He had been educated at Magdalen College, in Cambridge, England, where many Puritan scholars were then gathered, and where he must have learned to sympathize with the aims of the New England settlers. All accounts describe him as a man of remarkably pure character and profound scholarship. Quincy says of him and his successor, the Rev. Charles Chauncy, that for learning, talent, and fidelity they have been "surpassed by no one of their successors;" and Dr. Chaplin, his biographer, calls him "one of the greatest masters of the oriental languages that hath been known in these ends of the earth."

He was still young and unmarried when the magistrates and ministers of the six towns intrusted to him the affairs of the embryo college. But the choice was most fortunate, and for the prosperity beginning with these early years and continuing throughout its entire history the college is more indebted to the wise administration of President Dunster than probably to that of any of his successors. So excellent was the course of instruction framed by him that, from the first, the college was acknowledged to furnish "an education adequate to every department of the civil or sacred service of the country, and not inferior to that of the distinguished schools in Europe." Such, during his administration, was the fame of the college that young men were sent over from England to receive their education. Yet the whole property of the college consisted then of but a single building and somewhat less than 3 acres of land, and so few were they in numbers that if teachers and pupils had been increased tenfold they would scarcely have equaled the number of professors and instructors in Harvard College to-day. The building, which was situated in the midst of a narrow strip of land "bordering a pleasant river," was "thought by some to be too gorgeous for a wilderness and yet too mean in others' apprehensions for a college."

REGULATIONS ESTABLISHED BY THE FIRST PRESIDENT.

When Dunster assumed the presidency there was as yet no constitution, no "laws, orders, and liberties" as afterwards devised by him, and no legal governing board to whom the financial and other interests of the college could be intrusted. First of all it was necessary to provide these. Accordingly, in 1642, a constitution was framed, committing the

management of the college to a board of trustees. This was followed, in 1650, by a charter, granted by the legislature, creating an additional corporate body with extended powers, who should have immediate supervision of the affairs of the college. The work intrusted to the young president was to lay the foundation for education and discipline. This he did by judicious requirements for admission, by thorough courses of study, and by constructing a system of government that should enter into all the minutiae of college life. We should expect these regulations to conform largely to those then in force in the English universities, but in point of fact the resemblances are few; this college in the American wilderness was mostly a new creation.

The conditions for admission established by President Dunster for the examinations of 1642 and following years were as follows:

Whoever shall be able to read Cicero or any other such like classical author at sight and make and speak true Latin in verse and prose, *suo ut aiunt Marte*, and decline perfectly the paradigms of nouns and verbs in the Greek tongue: Let him then and not before be capable of admission into the college.¹

After the examinations had been successfully passed, the candidates were received into the college by the president and fellows, who in testimony thereof signed a copy of the college laws which the students had previously copied and brought with them. These were held as certificates of matriculation. The college laws and certain other forms that must be subscribed to by the students, as also by the fellows, when admitted to the college were in Latin.² Certain "Rules and Precepts" were also drawn up by President Dunster for the government of the students. According to these, they must "lay Christ in the bottom as the only foundation of all sound knowledge and learning;" must read the Scriptures twice daily, and "be ready to give an account of their proficiency therein" whenever the tutor shall require it; eschew "all profanation of God's name, attributes, word, ordinances and times of worship," and strive to retain God and the love of His truth in their minds; "studiously redeem the time," observing the general hours appointed for all the students and also the special hours for their own *classis*, and diligently attend the lectures "without disturbance by word or gesture," and, in case they should need help, they are to inquire of their fellows or "modestly of their tutors;" promise to avoid

The parish ministers usually prepared the young men for their examinations, and Latin was taught as a spoken language. Often teacher and pupil would take walks together through the fields and woods, and converse of all they saw in Latin. Thus the pupil got a practical knowledge of the ancient, similar to that which is customary to-day in the study of a modern language. The time was then specially favorable to this method of study, as few books were accessible, and such as they had, like the Bible, they knew almost by heart. This outdoor life and daily communion with nature also helped to develop good moral and physical constitutions, and so, in spite of the poverty of books, by this training the foundation was laid for many a noble life and for high scholarly attainments.

²A century and more after this, according to the letters of Judge Wingate, the steps necessary to be taken to secure matriculation remained materially unchanged; only then the college laws were written in English and copies had been printed.

the society of such as lead unfit or dissolute lives, and never go abroad to other towns without the permission of tutors, parents, or guardians; be at their tutor's chamber at seven in the morning and at five in the evening with the stroke of the bell, that they may attend to the reading of Scripture and prayer, and "give an account of their own private reading,"—none to offend this rule above once a week; and in the seventh and last it was declared that if any scholar shall be found to transgress any of the laws of God or the school, after being twice admonished, he shall, if a minor, be chastised, but if an adult, his name shall be given up to the overseers of the college "that he may be admonished at the public monthly act."

Besides these, we find in the "Laws, Liberties, and Orders," confirmed by the overseers and president of the college in the years 1642–46, some excellent rules, of which the following will afford an illustration:

They (the students) shall honor as their parents, the magistrates, elders, tutors, and others older than themselves, "as reason requires," by being silent in their presence except when called upon to speak; "not contradicting, but showing all those marks of honor and reverence which are in praiseworthy use, such as saluting with a bow, standing uncovered, and the like." Students were forbidden to buy or sell anything without the permission of parents, guardians, or tutors; to speak in any language but the Latin, unless required to do so in their public exercises, or absent themselves from prayers or lectures. They could not, until invested with their first degree, be addressed by their surname unless fellow commoners or members of the nobility.

As great respect was then paid to rank, the students throughout their course were "placed" at recitation, at commons, and in the chapel, according to their social position. Minute orders were given respecting their conduct while in the dining hall, and their deportment towards the steward and "the cook and butler, or brewer and baker," who were the "officers of the House or College."

Very strange indeed were the regulations governing the conduct of the freshmen towards the other members of the college community. They were such as the following:

1. No freshman shall wear his hat in the college yard unless it rains, hails or snows, provided he be on foot and have not both hands full.
2. No undergraduate shall wear his hat in the college yard when any of the governors of the college are there; and no bachelor shall wear his hat when the president is there.
3. Freshmen are to consider all the other classes as their seniors.
4. No freshman shall speak to a senior with his hat on, or have it on in a senior's chamber, or in his own if a senior be there.
5. All the undergraduates shall treat those in the government of the college with respect and deference; particularly they shall not be seated without leave in their presence; they shall be uncovered when they speak to them or are spoken to by them.
6. All freshmen (except those employed by the immediate government of the college) shall be obliged to go on any errand (except such as shall be judged improper by some one in the government of the college) for any of their seniors, graduates, or undergraduates at any time, except in studying hours or after 9 o'clock in the evening

7. A senior sophister has authority to take a freshman from a sophomore; a middle bachelor from a junior sophister; a master from a senior sophister, and any governor of the college from a master.

8. Every freshman before he goes for the person who takes him away (unless it be one in the government of the college) shall return and inform the person from whom he is taken.

9. No freshman, when sent on an errand, shall make any unnecessary delay, neglect to make due return, or go away until dismissed by the person who sent him.

10. No freshman shall be detained by a senior when not actually employed on some suitable errand.

11. No freshman shall be obliged to observe any order of a senior to come to him, or go on any errand for him, unless he be wanted immediately.

12. No freshman, when sent on an errand, shall tell who he is going for unless he be asked; nor be obliged to tell what he is going for unless asked by a governor of the college.

13. When any person knocks at a freshman's door, except in studying time, he shall immediately open the door, without inquiring who is there (Quincy's Hist., vol. II, pp. 539-40).

These "Laws, Liberties, and Orders" are said to have remained in force during the seventeenth century.

The course of study devised and adopted by President Dunster was most liberal and comprehensive, and embraced arithmetic, geometry, rhetoric, logic, ethics, physics, metaphysics, politics, and divinity; also Hebrew, Chaldee, Syriac, Latin, Greek, and English. The Old and New Testaments were principally used for the study of the Hebrew, Greek, and Latin languages. These were used in the daily reading and translating of the Scriptures at the morning and evening prayers. In addition to the studies of the course, there were lectures in summer on the nature of plants, and in winter on history, and set themes were announced for discussion somewhat after the manner of the disputations in the early German universities, and written theses were required of all.

The plan of the recitations, in which Greek as well as Latin was to be specially honored, was as follows:

FRESHMEN.

Mondays and Tuesdays	{	8 a. m.	Lectures upon logic.
		8:45 a. m.	Lectures upon physics.
		2 p. m.	Disputations.
Wednesdays	{	8 a. m.	Etymology and syntax.
		2 p. m.	Precepts of grammar "in such authors as have variety of words."
			Greek.
Thursdays	{	8 a. m.	Hebrew grammar.
		2 p. m.	"Practice in the Bible."
Fridays	{	8 a. m.	Rhetoric.
		9 a. m.	Declamations. ¹
Saturdays	{	8 a. m.	Divinity catechetical.
		9 a. m.	"Common Places."
		1 p. m.	History in winter and the nature of plants in summer.

¹ These were so ordered that every scholar should declaim once a month. For the remainder of this day it was said, "*vacat rhetoricis studiis*."

JUNIOR SOPHISTERS.

Monday and Tuesdays	{ 9 a. m. 3 p. m.	Lectures upon ethics and politics "at convenient distances of time." Disputations.
Wednesday	{ 9 a. m. 3 p. m.	Prosody and dialectics. Practice in poetry. Greek.
Thursdays	{ 9 a. m. 3 p. m.	Chaldee. "Ezra and Daniel." Hebrew.
Fridays	{ 8 a. m. 9 a. m.	Rhetoric. Declamations. ¹
Saturdays	The same as the freshman.	

SENIOR SOPHISTERS.

Monday and Tuesdays	{ 10 a. m. 10:45 a. m. 4 p. m.	Arithmetic and geometry. Astronomy. Disputations.
Wednesday	{ a. m. p. m.	Perfected their "theory." Exercises in style, composition, imitation, and epitome, both in prose and verse. Greek.
Thursdays	{ 10 a. m. 4 p. m.	Syriac. Tristinus (or Trostius) New Testament. Hebrew.
Fridays	{ 8 a. m. 9 a. m.	Rhetoric. Declamations. ¹
Saturdays	The same as the freshman.	

¹ These were so ordered that every scholar should declaim once a month. For the remainder of this day it was said, "*vacat rhetoricis studiis*."

An examination of the "sum of every lecture" must be made before the next lecture was read. The curriculum, as given in the preceding table, extended only through three years, but Palfrey says that "in or before the year 1655, the course of study for a bachelor's degree was lengthened from three years to four, and that in consequence of the change some students left the college."¹

¹In the report of the first commencement, it is stated that the students of the first class "have been these four years trained up in university learning." We find, however, no mention of senior studies at so early a date. During the first century of the college many changes were made in the course of study. From an official report by the tutors in 1726, we learn that the freshmen had recitations four days in the week in the grammars, and in Cicero, Virgil, and the Greek Testament; on Friday mornings in rhetoric, and on Saturdays in the Greek catechism, and towards the close of the year in disputations on Romus' definitions. The sophomores on Mondays and Tuesdays had disputations, and during five days they had recitations in Burgersdicius' logic and a manuscript called New Logic, and in the ancient classical authors and natural philosophy; on Saturday mornings in Wollebius' Divinity, and towards

COLLEGE LIFE.

There could have been no more interesting event in early colonial life than the opening of this college, and the successful inauguration of so complete a system of instruction. Had President Dunster's mind been enriched by all the stores of modern learning, it would scarcely have aided him in framing a system of study and discipline better adapted to the circumstances of the time, or more in harmony with the training which was then demanded for young men. Unfortunately for us, few records were made of that period, and we must, therefore, rely mostly upon the imagination to lift the veil which shrouds that first morning in 1640 when the light-haired Dunster called around him the score of lads who had presented themselves for matriculation, and plied them with such questions as would indicate to him the extent of their progress in Latin and Greek, and in biblical studies. It is difficult, also, to find any record of the routine of college life which then began, of the amusements and recreations which relieved the tedium of study in those hard-working years, when, as it would appear, life was more solemn and serious to the undergraduate than it became soon after the opening of the eighteenth century. If, to cite but a single regulation, the rule adopted by the president, that only Latin should be spoken on the college grounds, was enforced, it is not possible to suppose any marked display of exuberance of spirits, unless we are to credit the undergraduates with a most intimate knowledge of colloquial Latin. The author of "New England's First Fruits" gives us a bare glimpse of this early college life, wherein he tells of "a spacious hall" in the college building, where the students "daily meet at commons, lectures, and exercises," of a large library "with some books to it," and of chambers and studies, and "other rooms of office," etc. Also, that beside the college was the "faire grammar schoole," where the famous Master Corlett so long wielded the rod.

President Dunster seems to have understood fully the importance of work to the good government of young men. Not only had every hour, as it appears, some duty assigned to it, but even mingled with their public devotions, at morning and evening, there was manifest the same purpose to secure mental training and discipline; yet, in spite of this,

the close of the year in Heereboord's Meletemata. The junior sophisters had, besides disputations, recitations in the Meletemata, in physics, ethics, geography, and metaphysics, and on Saturday morning in Wollebius' Divinity. The senior sophisters had disputations once a week, and recitations in arithmetic, geometry, and astronomy, with Ames' Medulla on Saturdays, and towards the close of the year a review of "The Arts." Unless excused, all students except the freshmen were also obliged four days in the week to attend instructions in Hebrew. It was only two or three years previous to this that Dr. Cotton Mather complained that the students were compelled "to get by heart a deal of insipid stuff, of which the tutors teach them to believe nothing," saying also of many of the books they studied, that they may "truly be called Satan's library." Previous to this date (1726) the practice of speaking Latin had been discontinued. (Compare Quincy, vol. 1, 341.)

there were evidently some unruly spirits who sorely tried the temper and patience of the kind-hearted president. Certainly as shown by the records of 1656, only two years after he retired from the presidency, it was already the custom to turn "unruly college boys" over to the civil authorities, and the latter, we are told, strangely took the ground that college criminals should fare no "better or otherwise than similar offenders outside Parnassus." A law was passed by the general court of the Massachusetts colony, in 1656, authorizing fines and corporal punishment, according to which the president and fellows, or a majority of them, were empowered to punish all misdemeanors of the students, either by fine or public whipping in the hall, as the nature of the offense might demand, only that the penalty should not exceed 10 shillings, or 10 stripes for each offense. This law was to continue in force until the general court or the overseers of the college should provide some other way to punish such offenses. In June, 1659, the corporation of the college authorized the Cambridge town watch to exercise their powers within the college "houses and lands," and enforce order. This was done "to seek redress" for abusive words and acts of the students; but the officers were in no case to lay violent hands on any of them. Their duty was simply to secure the students until the president or some of the fellows could be informed. Neither could any of the watch break into the students' chambers without receiving special orders from some officer of the college. By another act, passed by the corporation in the same year, any student out after 9 in the evening was to be held responsible for all disorders that occurred, unless he could prove himself innocent. In 1682 the civil authority was called upon to aid the corporation in expelling a student and prevent his remaining within the college walls after the expiration of 24 hours. His offense was "his abusive carriage in requiring some of the freshmen to go upon his private errands, and in striking the said freshmen."

The system of flogging which was early recognized in the college, and sanctioned by the general court in 1654, was also authorized by the revised body of laws published in 1734. In the latter, however, it was limited to "boxing of the undergraduates," and but a few years later we read that "corporal punishment was going out of use." In the beginning the president personally attended to the flogging, but the tutors availed themselves freely of their privilege of "boxing," an exercise which may possibly account for their unusual vigor and long terms of service, for one of them, "Tutor Flynt," served the college 55 years, and others for periods but little short of this. When flogging was resorted to, the occasion was observed with great solemnity. Chief Justice Sewall tells of one that occurred in 1674. On that occasion the overseers of the college, the president and fellows, the students, and others who chose to attend, having been called together in the library, the sentence was read in their presence and the offender required to kneel. The president then offered prayer, after which the "prison keeper at

Cambridge," at a given signal from him, "attended * * * to the performance of his part of the work." The president then closed the "solemn exercise" with prayer. The student thus chastised was "suspended from taking his bachelor's degree" and required to sit alone uncovered at meals as long as the president and fellows should order, and be obedient to all regulations, or else suffer expulsion from the college.

The college laws of 1650 forbade the students to use tobacco "unless permitted by the president with the consent of parents or guardians, and on good reason first given by a physician, and then in a sober and private manner." They also prohibited, without special permission, the attending of public civil meetings, elections, courts of justice, fairs, military parades in college hours, or the joining of any military band, "unless of known gravity, and of approved, sober, and virtuous conversation."

Early in Harvard history the students seem to have given the authorities of the college much trouble at commencement time. A peculiarity of the festivities, from which apparently originated the "spreads" of class day, was the fondness of the young men for plum cake. This was disapproved by the corporation, and that body, after having repeatedly forbidden its use, passed an act, June, 1693, putting "an end to that custom," and ordering, as a penalty for its violation, a fine of 20 shillings and the confiscation of the cakes. The anniversary of commencement had already become "a sort of saturnalia for the whole neighborhood," and the wild revels of the students were so prolonged that it was necessary to put policemen on guard for several days and nights together. The various repressive measures introduced to stop the evil of plum cake, and some other more serious evils, seem to have failed of their purpose, for in June, 1722, the corporation and overseers united in prohibiting the students from the use of liquors in their rooms, and from "preparing or providing either plum cake or roasted, boiled, or baked meats, or pies of any kind." In 1727 such was the weakness of the college government that both boards voted that the time for commencement should not only be changed and the occasion be "more private than has been usual," but that the day set apart for this anniversary should be concealed until almost the time for its observance. In addition to the concealment, the board to whom the matter was referred changed the day from Wednesday to Friday, "that there might be less remaining time of the week spent in frolicking." At this action the citizens of Cambridge and of the neighboring towns, as well as the clergy of the province, who were accustomed to observe commencement as a holiday, were greatly incensed, and as a result of their remonstrance, this concealment and the practice of holding commencement on Friday was, in 1736, discontinued, and Wednesday was thereafter observed. By another act of 1727, the degree was refused to any who should "presume to do anything contrary to the act of 1722, or go about to evade it by plain cake." Besides, if they were found guilty of the

violation of any of these acts after receiving the degree, their names should "be left or rased out of the catalogue of graduates." About this time the lieutenant-governor of the province was asked by the president to interfere and "prohibit the setting up of booths and tents on those public days." But all efforts to secure order during the evening and night following commencement seem to have been unsuccessful, though it became customary to station a constable and 6 men as a patrol "in and about the entry" of the college hall. The practice of "unsuitable and unseasonable dancing" also crept into the college to the great detriment of good discipline and the sorrow of the "honorable governors." In the last decade of the first century of the college, during the administration of President Wadsworth, the laxity of discipline had extended so far that some of the tutors purposely absented themselves from commencement, "a thing never known before." Immoralities were very rapidly increasing among the students, and to remedy these various evils it was thought necessary to adopt vigorous measures. Accordingly, a committee was appointed by the overseers to inquire into the state of the college. This committee reported that the college was "in a weak and declining state," and recommended the framing of a new body of laws, better adapted to the changed conditions of society, and the making of some improvements in the method of instruction. This was done, and the new laws (which were so minute that from the moment the student matriculated until he left college there was no act possible on his part that was not regulated by some law or followed by some penalty) were agreed to by the overseers and corporation in 1734. For absence from prayers, public worship, divinity lectures, or any college exercises, fines, usually of so many pence or shillings, were imposed for the first offense, and for repeated offenses this penalty was followed by admonitions, degradations, and expulsion; disorders on Sabbath evening received the same punishment as if made at any time during the Sabbath; tutors were required, in order "to quicken diligence," to visit the students' rooms in study hours and after 9 o'clock at night; students and graduates were forbidden to use punch, flip, and like intoxicating drinks; all immoralities, such as swearing, cursing, uncleanness, lying, stealing, breaking open chambers, picking locks, and playing or sleeping at public worship or prayers, were visited with severe penalties; and graduates, bachelors, and masters of arts were subject to reproof and to have their rooms visited by the president.

It is highly probable that the occasion of many of the petty disorders among the students was the quality of food furnished at "the scholars' commons." Complaints of this kind began at an early period, but it was not until long afterwards that any earnest efforts were made to improve the commons. Then a committee was appointed, clothed "with full powers" to rectify the disorders and provide "the necessary officers, as steward, butler, and cook." Among other things, this committee decreed "that commons be of better quality, have more variety,

clean table-cloths of convenient length and breadth twice a week, and that plates be allowed." The quality of the commons was then a matter of great interest to students and tutors, as the overseers had voted that "all who had actually studied at college and resided there were ordered to be in commons" unless excused by the president and a majority of the tutors. The tutors were also required to be in the hall during the hours for meals, to prevent disorders. The colonial government and the early patrons of Harvard College very strenuously insisted upon the maintenance of this feature of college life, as they believed that many benefits would accrue to the students from such association, that is, by being brought up *collegiately*, and not allowed to board here and there in private families, as was done in some European universities.

In spite of all that was said at the time in disparagement of the college, it is evident that it was true then, as it is now, that the disorders were the work of but a small number of the students. We know from the high positions afterwards filled by most of the graduates, that, in general, the character of the students was good. The Puritan fathers, however, had suffered so much for the sake of their religion that they were, doubtless, somewhat too severe in their denunciation of conduct that seemed lacking in solemn and respectful decorum, which they considered the chief outward manifestation of a religious life. The college regulations required that the students should attend church in Cambridge, where "a particular gallery" was allotted them; and Dr. Cotton Mather tells us they "were greatly benefited and their after lives greatly influenced" by the sermons and counsels of the devout pastors who ministered there, and cites the influence of these pastors as similar to that of a certain famous preacher at the English Cambridge.

The reading and expounding of the scriptures at morning and evening prayers, which had been a marked feature of the daily routine of college life during the first half century, seems gradually to have grown into disfavor, so that even Dr. Increase Mather—a great stickler for the old methods—speaks, in 1698, thus contemptuously of this custom, which he had evidently neglected: "Only to expound to 40 or 50 children, few of them capable of edification by such exercises!"

In 1708, soon after Leverett became president, this custom was revived by the corporation. The freshmen were then, however, permitted to use their English Bibles, but all other students were required in the morning to read Hebrew from the Old Testament and translate into Greek, and in the evening service read an English or Latin version of the New Testament and translate into Greek; but this was only customary "whenever the president performed the service." A few years later, this exercise had become so distasteful to the students that the president declared that, if he continued it, he would have to be "supported," indicating his belief that there was danger of rebellion. After

1725, the classes met for their scripture reading "at the chambers of their respective tutors." The morning service then began with a short prayer by the president, after which he read and expounded a chapter from the Old Testament. In the evening he read from the New. On Saturday the religious exercises were varied by the singing of a psalm, and on Sunday a psalm was sung both morning and evening, but the exposition of the scripture was omitted. On Sunday evening one of the students in course was called upon to repeat the sermons preached that day in the parish church.

EXAMINATIONS AND DEGREES.

During the college course the students had weekly declamations, on Fridays, in the college hall, and also disputations, which either the president or one of the fellows moderated. The author of "New England's First Fruits" says that in President Dunster's time public declamations in Latin and Greek and logical and philosophical disputations were held once every month "in the audience of the magistrates, ministers, and other scholars" to test the progress of the students in learning and godliness. For 3 weeks in June each year all students of 2 or more years' standing were required to attend in the "hall" from 9 to 11, and from 1 to 3 on Mondays and Tuesdays, for their annual examination. As visitors might at this time test their proficiency in the studies pursued, and, as it was customary for some of the overseers of the college to visit the school whilst the students were thus doing "what they called sitting of solstices," these were known as "weeks of visitation." Those who failed to pass the examination were "deferred to the following year." The degree of bachelor of arts was conferred (at least after 1655) upon all who had completed the 4 years' course of study, and the master's degree upon graduates of 3 years' standing. The examinations for these degrees were frequent and close, particularly just before commencement, but good conduct, as well as scholarship, was essential in order to secure a degree. To quote from the ancient record:

Every scholar that on proof is found able to read the originals of the Old and New Testament [and translate] into the Latin tongue, and to resolve them logically, withal being of godly life and conversation, and at any public act hath the approbation of the overseers and master of the college, is fit to be dignified with his first degree.

Every scholar that giveth up in writing a system or synopsis or sum of logic, natural and moral philosophy, arithmetic, geometry, and astronomy, and is ready to defend his theses or positions, withal skilled in the originals as above said, and of godly life * * * is fit to be dignified with his second degree.

The idea of studying in all 7 years was, it is said, "to answer to the Horatian character of an artist :

*'Quis studiis annos septem dedit, insenuitque
Libris et curis.'*

The candidate for a degree was required to make application for it to the overseers. In doing this a certain formula was followed which

President Dunster had prepared. Other formulas—for presenting the candidates to the overseers when about to receive their degrees, those to be used in making a public confession, and also certificates of character, to be given to undergraduates, bachelors, and masters of arts—were prepared by the indefatigable Dunster.

The degrees of bachelor and master of arts were the only ones authorized by the first charter. But by the temporary charter of 1692 the honorary degree of doctor of divinity was given to President Mather. A like degree was not given until 79 years later, when it was received by Mr. Appleton, the pastor of the church at Cambridge. Years before this date, however, the laws of Harvard College provided for a doctorate in divinity; but, “partly from the novelty of the matter itself” and partly from “the modesty of the persons most worthy,” the degree was not conferred.

COMMENCEMENT DAY.

The first commencement (a term borrowed, apparently, from the English universities, and meaning the day on which the scholar *commenced* the career of bachelor of arts) took place at Cambridge on the second Tuesday in August, 1642, when a class of nine was graduated. Great interest was taken in it by all the people, and, judging from the unusually minute report of the proceedings of the day, the occasion must have fully met the expectations of the friends of the college. Indeed, so auspicious was the event considered that a letter was addressed by the governor and “diverse of the ministers” to their friends in England, in which they say of the students of the first class that they were thoroughly examined for their commencement, and that “the governor, magistrates, and ministers from all parts, with all sorts of scholars and others in great numbers were present and did hear their exercises, which were Latin and Greek orations and declamations, and Hebrew analysis, grammatical, logical, and rhetorical, of the Psalms: and their answers and disputations in logical, ethical, physical, and metaphysical questions; and so were found worthy of the first degree (commonly called bachelor) *pro more Academicarum in Anglia.*”

At this first commencement they had printed programmes, issued from their own “university press,” which gave in Latin the list of questions to be discussed. Of these questions ten were in grammar, four in rhetoric, thirteen in logic, eleven in ethics, fifteen in physics, and four in metaphysics. Quite a remarkable fact is to be noted in connection with these themes, namely, that although the college was conducted mostly as a theological institute, in accordance with the political feeling of the time, the questions discussed were those of philosophy or philology.

At the close of the discussions, which were conducted in Latin, the candidates were first presented to the magistrates and ministers—that is, to the overseers—and being approved by them, they were then formally admitted by the president to the degree of bachelor of arts,

and "a book of arts" was placed in the hand of each and power given "to read lectures in the hall upon any of the arts when they shall be thereunto called, and a liberty of studying in the library."

A few years after the founding of the college, the time of commencement was changed to the first Wednesday in July. It was then customary, as generally now in our colleges, for the candidates on their programmes to dedicate¹ their theses to the governor and to other distinguished patrons and scholars who were expected to be present, and in their salutatory and valedictory orations to address with proper compliments "all persons and orders then present," and make suitable reference to the most remarkable occurrences of the preceding year. The candidates for the second degree published their theses "on a half sheet," and without any dedication. The latter theses—usually three in number—were discussed in the afternoon of commencement, when it was the custom for the president also to deliver an oration in Latin. The theses of the graduates did "not show such a veneration for Aristotle as is expressed at Queen's College in Oxford, where they read Aristotle on their knees, and [where] those who take degrees are sworn to defend his philosophy." While they preferred the "Ramean discipline" to the Aristotelian, they appear to have adopted a liberal philosophy which would rank them with the "Eclectics," who chose out of all philosophies "what they liked best in any of them."

Before the close of the first century, the custom had been introduced of making a public display and parade on commencement day, so that this became the great holiday of the year, not only for Cambridge and Boston, but, it may be said, for the State. The governor, attended by his body guard, came from Boston by way of Roxbury, and often by Watertown, reaching Cambridge about 10 o'clock. A procession, consisting of the corporation, overseers, officers and students, magistrates, and other friends of the college, having then formed, moved from Harvard Hall to the Congregational Church, where the exercises of the day were to take place. The earliest commencements were held in the hall of the college. When they were first held in the "meeting house" is not known, but it was certainly before 1725. The bachelors walked first, two in a rank, and then the masters, all bareheaded. Then the president followed alone. Next came the corporation and tutors, two in a rank; then the honorable governor and council, and next to them the rest of the gentlemen. The opening prayer by the president, the salutatory in Latin which followed, the part assigned to each member of the graduating class, mostly in Latin, the coming forward to the platform to receive their degrees from the president while he also addressed them in Latin, constituted the "commencement exercises."

The morning programme having been concluded, the procession returned to Harvard Hall for dinner, after which it reformed, and, return-

¹ On the commencement programmes of Harvard College, "*dedicant*" was used until 1865. Since then, "*invitant*" has been substituted, and the phraseology changed.

ing to the church, listened to the masters' disputations,¹ the president's address, and the valedictory. The conferring of the masters' degrees then followed, at the conclusion of which the students escorted the governor, corporation, and overseers in procession to the president's house, and thus the ceremonies of the day were closed.²

CHARACTER AND NUMBER OF THE STUDENTS.

As far as we are able to form an estimate of the early graduates of Harvard College, we judge that they would compare well in character, ability, and scholarship with the graduates of to-day. Our best source of information respecting them is the *Magnalia* of Cotton Mather. From this it appears that during the first half century nearly or quite half entered the ministry, many of whom attained to high positions in the church. The historian Hubbard also writes, about 1680-82, that "most of the towns in the country, about a hundred in all, [were] furnished with able ministers that there had their education." With the exception of Dunster and Chauncy, all the presidents and tutors of Harvard College were chosen from among its graduates. It also sent out into public life magistrates, physicians, and others whose services were an honor to the Commonwealth. For more than 30 years before Mather wrote the *Magnalia*, all the agents sent over by this country to appear at Whitehall to represent its interests were educated at this college. After the execution of Charles I, many of the graduates set

¹ For subjects discussed by candidates for master's degree at Harvard see *Proc. Mass. Hist. Soc.*, 1880. They are very suggestive.

² In Judge Wingate's letters (written about 1831, when he was 92 years old) to Mr. Peirce, the historian of Harvard College, giving early recollections of college days, he writes as follows of commencement, referring to a period somewhat later than that of which we are treating: "I do not recollect now any part of the public exercises on commencement day to be in English except the president's prayers at opening and closing the services. Next after the prayer followed the salutatory oration in Latin by one of the candidates for the first degree. This office was assigned by the president and was supposed to be given to him who was the best orator in the class. Then followed a syllogistic disputation in Latin in which four or five or more of those who were distinguished as good scholars in the class were appointed by the president as respondents, to whom were assigned certain questions which the respondents maintained, and the rest of the class severally opposed and endeavored to invalidate. This was conducted wholly in Latin, and in the form of syllogisms and theses." When the "disputations were going on the president had often occasion to interpose and set the disputants right. * * * This was always done in Latin." During these exercises the president (Holyoke) always improved the occasion to express his sentiments upon the questions under discussion, and thereby showed "his readiness at discoursing in a learned language." At the close of the disputation the president usually added some remarks in Latin, after which he conferred the degrees. "This, I think, may be considered as the summary of the public performances on a commencement day. I do not recollect any forensic disputation, or a poem or oration spoken in English whilst I was in college. I well remember that about the years 1757 or 1758 the exercise of the forensic disputation in English was introduced and required of the two senior classes. And I think it likely that about the same time it became a part of commencement exercises."

tled in England and became eminent as clergymen, public writers, and officers of the civil government. These early students came from all the New England colonies; the single town of New Haven, it is said, up to the year 1700, having furnished one-thirtieth of the whole number.

The education of both "the English and the Indian youth of the country in knowledge and godliness" was, according to the charter of 1650, the object sought in the establishment of a college. The education and the conversion of the Indians seem to have been among the deeply cherished plans of the Puritans. In furtherance of this design, with the aid of the London society, a brick building large enough to receive 20 scholars was erected on the grounds in 1653, and called Indian College, but it was never needed. There were at one time several Indian students, but only one, Caleb Cheeshahteumuck, in 1665, received the bachelor's degree. As this one soon after died of consumption, further efforts for the education of Indian youth were mostly abandoned.

The number of students at Harvard College during the first period must have been very small. Indeed, during the first 65 years to the beginning of Leverett's presidency there were only 531 graduated, an average of about 8 each year. After this period the number of graduates rapidly increased, and before the termination of the first century it passed out of the trying years of its youth, during which it was seldom free from pinching poverty and internal conflicts, and entered upon the more placid period of its maturity with endowed professorships in the chairs of divinity and mathematics, and with greater advantages for study and research in all departments of college work.

FORMATION AND POWERS OF THE OVERSEERS AND CORPORATION: THE CHARTERS.

Harvard College has been called the child of the people. Its claim to this title is derived from the act of the general court of the Massachusetts colony in 1636, when, as an expression of the popular wish, it was voted that £400 be given for the establishment of a college. Its interests appear to have been at first intrusted to the general court, but by the act of 1642 a board of overseers was created to whom the management was transferred. This board, consisting of the governor and deputy governor of the colony, "magistrates in the jurisdiction," president of the college, and the "teaching elders" of the towns of Cambridge, Watertown, Charlestown, Boston, Roxbury, and Dorchester, met for the first time December 27, 1643. To it was given full power to make and establish such laws as were thought necessary for promoting the best interests of the college "in piety, morality, and learning;" also to receive and invest all gifts, legacies, or other donations that had been or might be given to the college. The majority of the magistrates and teaching elders with the president were to have the power of the whole, but any aggrieved party could appeal from their decision to the full board of overseers, who were

"accountable to the general court." It was soon found that the board was too large to have the immediate direction of college affairs, and when, in May, 1650, the legislature framed a charter for the college, it gave enlarged powers to a corporation composed of seven persons, all of whom should be residents of the Massachusetts Bay. This body was to consist of a president, five fellows, and a treasurer or bursar, who should have perpetual succession by the election of members to supply vacancies, and was to be styled President and Fellows of Harvard College. It was organized soon after the act was passed, and came to be known in the community as the "corporation." The powers and limitations of this body, as defined by the charter, which for a long time was the only act authorizing it, were as follows: The members of this board, or a majority of them, of which the president of the college was to be chairman, could, with the "counsel and consent" of the overseers, elect a new president, fellows, or treasurer; purchase or receive upon free gift "any lands, tenements, or hereditaments" within the jurisdiction of the Massachusetts colony, not exceeding £500 per annum; also "any goods or sums of money whatsoever to the use and behoof of the said president, fellows, and scholars of the said college;" "sue and plead or be sued and impleaded" within the jurisdiction aforesaid; make and appoint a common seal¹ for the use of the said corporation; choose officers and servants and make allowances to them, and, as occasion required, make "such orders and by-laws for the better ordering and carrying on the work of the college as they shall think fit, provided the said orders be allowed by the overseers;" also (by the president giving due notice and calling a meeting) dispose of the profits and revenues of any lands, but always in accordance with the will of the donors; direct in all emergent occasions, and in grave and difficult cases procure a full meeting of the overseers and corporation, in all of which acts the majority of the members of the corporation should first decide, and the overseers were then to give their consent thereto. It was further provided that all these transactions should be for the good of the college, "for the advancement and education of youth in all manner of good literature, arts, and sciences."

As it was found impracticable for the corporation to get the immediate consent of the overseers, at the request of the latter, and to obviate the difficulty occasioned by this double authority, an appendix to the col-

¹The first seal was adopted in December, 1643, having, as at present, three open books (Bibles) on the field of an heraldic shield, with a syllable of *Veritas* upon each of them. The second seal (1650) had the same three Bibles with "In Christi Gloriam" in place of "Veritas," but during Dr. Increase Mather's presidency (1685-1701)—to aid, it is thought, in continuing the influence of the early Puritan doctrines—this was changed to "Christo et Ecclesiæ." (See Quincy, vol. 1, 49.) Still the first motto is the only one that has the authority of any college record. The late President Stearns, of Amherst College, said of American college mottoes that the design of nearly all the earlier ones was an open Bible with a full-orbed unclouded sun shining upon it. This was to typify their mission: "They set themselves up as the world's teachers."

lege charter was granted by the general court in 1657. According to the appendix, any order of the corporation could be executed without the consent of the overseers, but the former board was still responsible to the latter, and any order or by-law passed by them was "alterable by the overseers according to their discretion." Hence it became possible for the corporation to act independently in respect to all affairs pertaining to the government of the students and college servants, as also in establishing salaries or allowances; in disposing of the income of the college and the profits and revenues of lands; in receiving gifts and attending to other matters of a like nature—save only that their action was subject to revision by the overseers. Whenever it was thought best to call a meeting of the overseers to give validity to college acts, it was only necessary to notify those who were residents of the six towns mentioned in the act of 1642. The initiative of all measures belongs therefore to the corporation, and in the hands of its treasurer are placed the funds of the university.

As originally chosen by the general court, there were 12 overseers, 6 of whom belonged to the magistrates and 6 to the clergymen of Cambridge and the adjacent towns. The powers intrusted to this board, and its position and influence, can not be so well understood by searching into the original constitution as into the subsequent acts of the general court. Its relation to the corporation was for a long time far from pleasant. During Leverett's administration it let no opportunity pass to keep alive a spirit of opposition to the corporation on account of theological differences. The relation of the two bodies to each other at a later period is illustrated by the following: In the revision of the laws which took place in 1734, during President Wadsworth's administration, the overseers intrusted the matter to the corporation. This body, having revised the laws, presented them to the overseers for approval, by whom they were first amended, and then adopted and "published in the college hall in the presence of the overseers, the corporation, and the whole body of students." This was the first code of laws known to have been passed by both boards with the observance of all the forms which afterwards prevailed and which continue to this day. That is, the amendments proposed by the overseers were first recommended to the consideration of the corporation, and all further action suspended until "the law so amended was again presented to the overseers for their consent." In this way the whole body of laws was agreed to by both boards. If it should become necessary to remove an officer of the college or member of the corporation, the charter provides that action must first be taken by the corporation, and that "an independent power to judge, censure, and dismiss a member of the corporation is not vested in the board of overseers." The latter board can counsel the corporation to dismiss one of its members, and can approve the dismissal by the corporation of the president or any of its members.

On the whole, it may be said that the organization of the college was

"a singular specimen of skill and good fortune combined." Its large and constantly changing board of overseers made it sufficiently responsible to the community, and the slowness with which changes took place in the corporation gave assurance that no hasty action would be taken in modifying the administration of the college. The original records of the acts of the overseers prior to President Leverett's term can not be found, but Leverett himself made extracts from "the old overseers' book," which it is supposed no longer exists. There appear to be many entries of the meetings of the corporation lacking previous to 1692. The new charter of that year, which was not sanctioned by the crown, is given almost in full. From that year until 1708 the records are complete, and also after that date until 1750 they were kept with great accuracy by the successive presidents, and henceforth they are continuous up to the present time. In 1673, by an order of the general court, "some addition was made to the number of the corporation," but, with the exception of this change, the charter of 1650 continued in force until 1685, when the colony charter was vacated. In that year Mr. Dudley, having received a commission as president of the colony, named the head of the college rector, but did not interfere with the government and property of the college. In 1691, a provincial charter, granted by William and Mary, secured to the college all its property. Still, during the troubles that began with the vacating of the colonial charter and continued for some years, the president of the colony and afterwards the royal governor assumed, whenever they saw fit, entire authority over the college.

From 1672, when the legislature sought to alter the name of the corporation from President and Fellows to President, Fellows, and Treasurer, to modify some powers previously belonging to it, and grant important additional ones, civil and collegiate, until 1707, the college was not satisfied with its charter, and framed various new ones in the endeavor to secure a charter that would be acceptable both to the crown and the authorities of the college. One of these, drawn up by President Mather and accepted by the general court in 1692, contained some very extraordinary provisions. To give an instance: It authorized a corporation of 10 persons with perpetual succession, having absolute power to fill vacancies, elect officers of the college, hold land to the amount of £4,000 per annum, and personal estate to any amount; it exempted all the real and personal property belonging to the college and president from public taxes, and students, officers, and servants to the number of fifteen from military services. For four years the college was governed by this charter, but the royal assent being at length refused, it had to be abandoned. In all of the new charters provision for a board of overseers was omitted and the corporation enlarged, usually to seventeen members, of whom a majority were to be taken from the Puritan clergy. But the special ground of the royal complaint was the sectarian clause introduced into each, and also the provision for a visitation of the college by "the governor and council instead of by the

king and his governors." The charter of 1700, by reason of the death of the royal governor, was never presented to the king, and no subsequent attempt was ever made to obtain a charter from the crown.

It is worthy of mention that in these attempts to obtain a new charter, as in all matters pertaining to the college, the council and house of representatives of the Massachusetts colony took most intelligent and active interest. Principally through the influence of Governor Dudley, the legislature, in December, 1707, declared that the charter of 1650 had never been repealed, and directed the president and fellows of the college to exercise the powers granted by it. This reduced the number of the corporation to 7, as at the first, and the act "thus revived by a legislative resolve has been ever since recognized as the charter of the college." During this period, from 1684 until the revival of the act of 1650, the successive royal governors of the province of the Massachusetts Bay were accustomed "to assume the whole control in respect to the organization of the college," but they acted in harmony "with the wishes of those who had its interests at heart, and, moreover, made no attempt to violate the provisions of the original charter. But it was not until the State constitution was adopted, in 1780, when articles were framed, securing to the college the perpetual possession and enjoyment of all its estates, that the charter received official sanction, "the lieutenant-governor, council, and senate of the Commonwealth," together with the president of the college and "the ministers of the Congregational churches" in the six towns before mentioned, being then vested with all the rights pertaining to the overseers of Harvard College. Thus, while there was a nominal change in the constitution, substantially it was the same as the original, and so remained until near the close of the second century of Harvard history.

THE BOARD OF INSTRUCTION: FELLOWS.

As early as 1708 the title "The President and Resident Fellows" began to be used to designate what has since been known as the "Faculty of the College." Two or three years later, to distinguish those tutors who were not members of the corporation from "resident fellows," the title "Fellows of the College or House" was adopted, and about this time a tutor was inaugurated fellow of the house. This was the first solemnity of the kind after the restoration of the charter, and was celebrated by the express injunction of the governor of the province and the overseers of Harvard College. Evidently its purpose was to make the distinction clearer between a fellow of the corporation and a fellow of the house—the former having no inauguration. During Leverett's presidency, two tutors, who had been serving for several years as fellows of the house, suddenly laid claim to seats in the corporation. But their claim was not allowed, and there seems to have been no foundation for it, either in the charter or in precedent.

This question was definitely settled in the revision of the college laws

in 1725. In this, the election of tutors was limited to 3 years, and fellows of the corporation were not required to be resident instructors. The term "fellow" was first used at Harvard College about 1647, but it was then only a sort of shadow of the English fellow. There could in reality be no fellows of the college until the granting of the charter.

The plan for establishing fellowships was inaugurated by President Dunster and commended to the liberality of the people through the commissioners of the United Colonies. From the opinion expressed in the following, "Whereas it is expedient that pious, diligent, and learned graduates should be elected fellows, as emergent occasions shall require, and that they should have for their encouragement the stipend due from such scholars as are under their tuition," it is evident that he did not intend to make the term "fellow" apply exclusively to any particular class of men, or to "any academical quality as essential."

College fellowships were first instituted at Oxford and Cambridge, England, and the purposes which they were designed to serve were chiefly four: First, as a reward for high scholarship; second, as a ladder for the indigent student to rise by; third, as a recompense for the instruction which was to be given; and fourth, "the holders of fellowships were to form the governing board of the college." They were elected, after a competitive examination, by the officers of the college and could at Oxford hold the fellowships for life, unless they married, acquired property, or gained preferment in the church. Accordingly, "fellow" could be applied to resident and nonresident instructors, to student undergraduates—as is shown by donations made for the benefit of fellows who were understood to be students, and also to a "fellow of the college" in the sense of "the Latin word of which it is a translation, simply designating an associate or member of a society for whatever purpose."

The term seems to have been employed also at Harvard College in all these senses, though the second one is the more rarely met with; still, in the earliest years it was never applied to the instructors. Eliot says that, as a result of the disputes which arose, the conclusion was "that the word had too many acknowledged meanings to be tied down to one exclusive signification." For some years after 1642 the president, assisted by one or two tutors, whom he chose from the resident "Sirs" or bachelors, gave all the instruction, but after the formation of the corporation it was customary for one or more of the fellows to be resident instructors. After 1684, always one or two and perhaps at one time three of the tutors were fellows of the corporation; but, though there were ten, twelve, and once fifteen fellows of the corporation, the others were neither resident, nor gave instruction, nor received a stipend. Not until after 1725 did the president and tutors assume the authority of an independent board on all subjects of discipline. Before this time the tutors, on their personal responsibility, had imposed fines or "boxed" the students, and greater offenses had been punished by the president, after

consultation with the tutors, but of this phase of college life there was rarely any record kept. Still, that the officers of instruction enjoyed yet but a limited authority is shown by the vote of the overseers, in 1735, that the president and tutors have no authority by any law to introduce or permit any person to give instruction in the college. This resolve was called forth by the conduct of the teacher of French, who, it seems, had been employed without the consent of the overseers, and who was thought to be disseminating dangerous errors.

About this time, or a little earlier, Mr. Thomas Hollis, a wealthy merchant of London, established two professorships, by means of which the president, who had previously had only tutors to aid him in instruction and discipline, gained "the assistance of two men of eminence in very important departments of learning."

What the president's duties were during the first period of the college does not seem very clear. One of the most important would appear to have been the expounding of the Scriptures. This he often did as many as "eight or nine times in the course of a week." Other duties devolving upon him were to guard the morals and conduct of the students; preside at the meetings of the corporation, and, after 1725, at those of the faculty; attend the meetings of the overseers and record the proceedings; act as moderator of the weekly declamations and disputations as often as he could be present, and, as happened in the case of the first president (and also of Mr. Eaton, the master who preceded him), fill the position of treasurer to the college. To these duties must be added the giving instruction in the class-room, at least at first, and the keeping, for a time, of the records of the corporation.

We have seen that the charter of 1650 gave to a majority of the corporation, when confirmed by the overseers, the power to elect a president; moreover that in the election of the first president this power was assumed by the magistrates and ministers. No record of the earlier elections has been left us, but the proceedings on the occasion of Leverett's election are fully recorded, and were as follows: First a vote was taken by the corporation, and this was decided by a majority of those present. The vote was then officially presented to the governor, accompanied by an address, praying that he would accept it and move the general assembly to ratify it. Then followed other addresses to the governor by members of the clergy who favored Leverett's election, after which the governor communicated the proceedings to the council, who, having voted affirmatively, sent the matter to the representatives for their concurrence. The president being chosen, the general court voted the salary that should be paid him, for this was to be taken from the colonial treasury. A few weeks later, the "14th January, 1708, John Leverett was inducted into the office of president of Harvard College, by Governor Dudley; the overseers, corporation, and resident fellows being present on that occasion." Though the general court voted a definite salary to the president at the time of his election, it often, in

the case of the first incumbents of the office, failed to provide money for paying it, occasioning thereby great distress, and calling forth from the sufferers most pathetic though manly appeals. At a later date the tutors were also paid out of the colonial treasury, besides receiving what was "due to them from their several pupils." In 1686 the college had four assistants, or "Scholars of the House," who were each allowed a stipend of at least £5 sterling. The charter of 1650 exempted the property of the president and college, not exceeding £500 per annum, from all taxes and rates; the president, fellows, and scholars, and the officers and servants to the number of ten, "from all personal civil offices, military exercises or services, watchings and wardings," and, except as above stated, their estates, not exceeding £100 to each person, from all country rates and taxes whatsoever.

CHARACTER OF ITS THEOLOGY.

In sketching the early history of the first American university, due recognition should be given to the vast influence exerted by it upon the theology of the time. Its history in this respect is most remarkable. Its founders were of the strictest sect of the Puritans—of all men those who wished to propagate Christian doctrines as they understood them, and who had chiefly for this purpose united together to establish a college. Yet such large acquaintance did these men have with the world of practical sense and true liberality that the constitution of the college was wholly free from sectarian bias and illiberal doctrines, and so much did it favor the freest pursuit of truth in matters of theology, and freedom of opinion in all things, that it required no subscription or declaration of faith from any officer of the college. So marked is this fact that one has well said that we can not to-day "devise any terms more unexceptionable to assure the enjoyment of equal privileges to every religious sect or party." It is not probable that all the clergy, and perhaps not a majority of them, favored such liberality on the part of the framers of the first charter, yet, as far as we know, they suffered it without protest. Certainly the first two presidents held views widely at variance with the orthodox theology of the time, but the second never suffered therefor, and the same might have been said of the first had he not made it a matter of conscience to publicly disseminate his views upon infant baptism. The reason of this tolerance of opinion may possibly be found in the fact that there was a perfect church establishment, or theocracy, during the first 60 years of the colonial government, or until the vacating of the charter in 1684, or perhaps even to 1692, up to which year only church members were freemen and could vote. The civil constitution, therefore, would sufficiently guard their religious opinions without any mention of them in the college charter. It is easy then to see that by the new colonial charter, granted by William and Mary, in 1692, there was effected in the Massachusetts colony "as perfect and thorough a revolution as ever was produced by a similar act in

any State or nation." It changed the entire foundation and object of the government. It made freehold and property, instead of church membership, the qualification of the right of electing and being elected to office.

RELIGIOUS CONTROVERSIES.

At a later day, under the influence of the Mathers, and as a result of the dissolution of the first colonial charter and the weakening of the power of the clergy, the constitution of the college became a favorite subject of management in political circles, as is shown by the different charters that were drafted. Bitter religious controversies also sprang up between the two parties into which the friends of the college were divided, which at one time imperiled the life of the college. But long before this contest was over, Dr. Increase Mather, who, when it began, was its leading spirit, had suffered the loss of nearly all his influence. President Mather had doubtless been the most influential and popular man in the church and colony (having been president of the college, pastor of the Old North Church, and chief commissioner to the king to secure a new colonial charter), but there had come a sudden revulsion of feeling towards him, and this was occasioned principally through disappointment in the provisions of the charter which he had been instrumental in framing. The effect of this charter was to strip the Calvinist leaders of the power which they had so long wielded. This was evidently unlooked for by them, and they struggled long to regain what had been lost, but in vain. A new spirit had arisen and was being gladly welcomed by a large and intelligent body of the people, who longed for greater freedom of inquiry in all matters pertaining to their spiritual life. It would not be relevant to our purpose to enter into the details of this controversy. Dr. Mather resigned the presidency of the college in 1701, and during the interregnum of over 6 years which followed, Vice-President Willard was acting president, though, like Dr. Mather, he did not reside at the college. When, in 1707, a new election took place, Dr. Mather and his son, Cotton Mather, expected that upon one or the other the choice of president would fall. The candidate opposed to them was John Leverett—teacher, legislator, and theologian—a man who was not in sympathy with the rigid sectarianism and severe church discipline of the Puritan generation which had preceded him, and to which the great body of orthodox believers still adhered. But it was so patent to all that he was well fitted by temperament, learning, and experience for the presidency of the college, that the lot fell to him. Still the selection of Leverett was so bitter a disappointment to the Mathers on personal grounds and to some others on account of his liberalism in religious matters, that a party was formed in opposition, who strove unceasingly to weaken his influence and bring discredit upon all measures instituted by him. A plan was even formed to dissolve the corporation, and, by electing a new one friendly to their views, effect

the removal of the president. It would seem that a majority of the general court, as also of the overseers of the college and of the high Calvinists generally, were in sympathy with this movement, and that it would have succeeded had it not been for the firmness of Governor Shute, the royal governor. So intense became the feeling of the opposition that men like Chief Justice Sewall and Secretary of State Addington openly "indicated their dissatisfaction" with the management of the college, saying to those of Connecticut: "How glad we are to hear of the flourishing schools and colleges of Connecticut, as it would be some relief to us against the sorrow we have conceived from the decay of them in this province." But this opposition, which continued through 16 years until August, 1723, wholly failed in its purpose; on the other hand, it resulted not only in the triumph of the president and corporation but it consolidated and strengthened the new theological party, formed of such men as the Brattles, Benjamin Colman, and Leverett, until it became the dominant one in the colony. While these diverse sentiments continued respecting its management, the college doubtless suffered some injury, but, fortunately, they had also the effect to rally the friends of President Leverett more closely about him. This fact, in addition to his eminent fitness for the place, his fairness in dealing with opponents, and in settling the most difficult and perplexing questions, and his great personal popularity, doubled the number of students, increased the endowments (though it was a period of great financial depression), and made the college in all respects more prosperous than at any previous time in its history. Though Cotton Mather tried to bring under suspicion the spiritual condition of the college during Leverett's administration, its Christian character seems to have been fully sustained. Still, as indicated, it became less strictly theological, and its theology, while orthodox, was less sectarian and bigoted than in the preceding century. Not alone were corporation and college agitated by sectarian controversies, but the whole province was disturbed by them. It was one of those pivotal periods of which history furnishes many instances, when old forms of belief were changing and giving place to new interpretations of truth and duty, changes that appear inevitable, but of the immediate effect of which it is safe to predicate neither good nor bad.

ESTABLISHMENT OF A DIVINITY PROFESSORSHIP.

At the time of which we are writing—about the beginning of the eighteenth century—not only was the theology changing, but also with increasing wealth there was coming about a revolution in the manner of living. All this was reflected in the little college circle, and though religious controversy ended mostly with Leverett's administration, in 1724, and the college then or a little later entered upon a career of great and permanent prosperity, still many things would indicate that the morals of the students were becoming more and more open to censure.

It seemed, therefore, very opportune that at this time Mr. Hollis should offer to endow a divinity professorship in the college, "for the education," as he says, "of poor, pious, and able young men for the ministry." As Mr. Hollis believed in the tenets of the Baptist church, his offer must be considered most remarkable, and the more so since denominational lines were then so rigidly drawn. But of such a liberal mind was he that he made but the single stipulation that no one should be refused the benefits of the theological professorship on account of his "belief and practice of adult baptism." Of the professor chosen to fill this new chair he asked only that he subscribe to the following declaration: "That the Scriptures of the Old and New Testament are the only perfect rule of faith and manners." The selection of a suitable professor he left to the wisdom of the president and fellows, since he was to be under their inspection and that of the overseers of the college.

Mr. Hollis's generous offer received, as it merited, a grateful response from the authorities of the college. But alas for the weakness of human nature and the tenacity of dogmatic belief! After long wrangling over the unsectarian clause accompanying his proposal to endow the college, the overseers determined, while accepting the gift, to administer the trust in opposition to the will of the giver, and shut out from its benefits all who held to the doctrines of the Baptists. In fact, the test of admission to this department of study was to be a declaration of belief in the divine right of infant baptism. But such was the Christian forbearance of the generous benefactor that after information had reached him of the duplicity with which his gift had been received, he continued still until death his unselfish benefactions to the college.

THE FINANCES OF THE COLLEGE: THE LIBERALITY OF ITS FRIENDS AT HOME AND ABROAD.

The liberality of the American people since the opening of the present century in the endowment of schools seems to be a spirit inherited from the Puritan fathers. Certainly there is no record elsewhere of such systematic and generous giving for educational purposes as characterized the people of New England during the first half-century or more after the founding of the college. Not Massachusetts alone, but all the colonies were called upon to aid, both by sending pupils to its halls and by increasing its benefactions; and most nobly they responded. A reciprocal feeling thus sprang up between the college and its patrons that affected most favorably the interests of both; the annual contributions strengthened "the bonds of affection towards it" and kept it near the hearts of the people, and the college in turn sent back their sons well trained and fitted to adorn the highest positions in church and state.

The commissioners of the united colonies entered very heartily into the scheme of raising funds for the college, and their efforts were seconded by the clergy and the most influential of the laity. Such was

then the poverty of the people that the sums contributed were necessarily small. Connecticut gave annually the value of a peck of wheat for every family. In Massachusetts they gave what they could best spare. With some it was a cow or sheep or corn or salt; with others a piece of cloth or silver plate, a tankard, goblet, or some other treasured heirloom of the family.

As already stated, the general court had at the outset voted £400 towards the establishment of the college, but Quincy says that this sum was never specifically paid. In lieu of this, it gave, in 1640 and following years, the income of the ferry between Charlestown and Boston, and at a later date (1659) an annual grant, at first of £100 and afterwards of £150, for the support of the president, but it is said that during this period, and until the opening of the eighteenth century, the college received no grants or donations from the general court towards the erection of its buildings or the increase of its funds. These came wholly from the benefactions of private individuals. All the available receipts of the college, from all sources, during the first 18 years after it was founded "certainly did not exceed £1,400, and probably were less than £1,000." This had been expended in erecting and repairing the college building, and in providing for current expenses. In 1655, as appears by the report presented to the general court by the corporation and overseers, the real revenue of the college was about £12 sterling a year, besides £15 sterling received from scholarships. In this report it is stated that there is "nothing under their hands which they can make use of, either for the payment of debts or for the repairing of the college." In 1669, a new college building of brick, "fair and stately,"¹ was erected, costing nearly £3,000, of which sum Boston gave £800, and Salem, Portsmouth, Hull, and other towns very liberally. Even the remote little town of Scarborough, Me., gave "two pounds, nine shillings and six pence." In all, besides private contributions, 44 towns, mostly in Massachusetts, sent in their quota in order to complete this building fund. From 1654 to 1700, the different sums given to the college in money or commodities amounted to a little more than £6,000 sterling. In lands, during the same period, some 2,000 acres were given, which in time became valuable. Besides this (in addition to the library of Harvard, of which the catalogue, still existing, in the handwriting of President Dunster, contains a list of 320 volumes) the magistrates gave books valued at £200, and rare contributions were made by the clergy and others, and among these were gifts from English friends. Though some of the early records have been destroyed, there are fortunately enough remaining to give a very accurate idea of the kind and amount of the benefactions made to the college. Besides these, a record was kept of the money raised by taxation, and how the several amounts were expended for college buildings, repairs, and the like. The popular understanding always was that John Harvard's estate amounted to

¹ Harvard Hall, destroyed in 1764.

nearly £1,600, and his legacy is stated to have been £779 17s 2d. Still, there is no record to show that the college ever received more than £395 3s. Mr. Savage, the historian of Massachusetts, has suggested that a part of Harvard's property was in England, where, on account of the distracted state of the time, the administrators may have been unable to obtain it.

The poverty of the college during the seventeenth century is well shown by an act of the corporation in April, 1695, when it was "voted that six leather chairs be forthwith provided for the use of the library, and six more before the commencement, in case the treasury will allow of it." During President Leverett's administration, the financial condition of the college was greatly improved. The long contest over the provision in the will of Governor Hopkins of the Connecticut Colony, namely, "for the upholding and promoting the kingdom of the Lord Jesus Christ in those parts of the earth," and for the "breeding up hopeful youth * * * both at the grammar school and college for the public service of the country in future times," to which the heirs had opposed obstacles, was settled by a decree in chancery, in 1712. According to this decree, the amount of the legacy and interest from the death of Mrs. Hopkins, in 1699, in all, £800, was to be paid "in trust for the benefit of Harvard College and the grammar school at Cambridge." This legacy was paid in 1714, and the money vested in a board of trustees, who purchased with it an extensive and valuable tract of land and gave to it the name of Hopkinton. At nearly the same time (1713) the college received the amount which had been borrowed by the colonial treasury more than 60 years before. At that date (1647 or earlier), the Massachusetts Colony had received donations for the college, both from friends at home and in England, amounting in the aggregate to some £300 sterling. Being in need of funds, they had retained the money, paying therefor 9 per cent. interest for many years, and afterwards 6 per cent.

It was during the period of which we have been speaking that the number of students increased so rapidly that the college dormitory could no longer accommodate all of them, and lodgings had to be sought in town. Accordingly, the friends of the college turned to the general court for help, and their petition being indorsed and repeatedly pressed upon the attention of that body by the royal governor (Shute), the result was seen, in 1720, in Massachusetts Hall, a fine college edifice, costing the province about £3,500 in currency. Originally it was to have been only 50 feet in length, but the design was afterwards enlarged to 100 feet. Thus, with Harvard, Stoughton, and Massachusetts Halls, the college had attained to the dignity of a quadrangle, after the manner of the English universities.

During President Wadsworth's incumbency (1725-1737) benefactions, from home and abroad, in money, books, silver plate, apparatus, and the like, were being constantly received. To these the general

court added £1,700. It has been complained that the college received comparatively little help from the legislature. Of the first 70 years this appears to be true, but it is not true of a like period following. Among other acts it voted in 1725 the sum of £1,000 to build a new house for the president, and also increased his salary, though such was the depreciation of the currency that the salary paid rarely equaled in value £150 English money. Excepting Harvard and Stoughton Halls and Holden Chapel the charge of the college buildings was also borne by the colonial government. The library, however, which was rebuilt after the fire of 1764, grew largely out of donations made by private individuals. The total grants made to the college during its first century by the legislature of the Massachusetts colony amounted to about £8,000, but a large portion of this was voted to pay the annual salary of the president and other current expenses. From all other sources, mostly from private individuals, the college received during the same period over £22,000. These sums in reality represent values ten or even fifty-fold greater than the same amounts would to-day. The liberality of the general court, as also that of the people, to Harvard College should be gratefully acknowledged. The influence of this liberality has been felt during all the subsequent periods of New England history. President Walker said, in 1859, that almost all of the funded and productive property of the college was the accumulation of donations by private individuals since the present century began. The same is as true to-day. We are not, however, to infer that the people of this century are necessarily more liberal, but rather that they have larger means.

There was another source of income to the college that we have omitted to name. From the beginning the students were required to pay a stated amount for tuition. How much it was at first we do not know. We know simply that it was paid in various commodities, grain being then "a legal tender for the payment of debts." When the new code of laws was framed in 1734 it was made obligatory upon every student before being admitted to the college to pay £5 to the steward to defray "his future college charge," and to give a bond of £40 that he would pay college dues quarterly as they were charged in the "quarterly bills."¹

Harvard College had, during its first century, some devoted friends, who should always be remembered in its history, as they stand preëminent, not alone for their benefactions, but also, and perhaps much more,

¹ A debit and credit account was kept by the steward with each member of the college. Undergraduates were charged for "commons and sizings," tuition, "gallery"—probably a seat in the church—study-rent, "bed-making," and "fire and candle." A few payments were made in silver, but the greater part were commodities carried out as so much money, such as "a sheep weighing 67 pounds equals £1 1s.," "2 bushel of wheat" 8 shillings, etc.

Quarter days.—(1) Lady day, March 25; (2) Midsummer day, June 24; *Michaelmas* day, September 19; and Christmas day, December 25.—(Brande.)

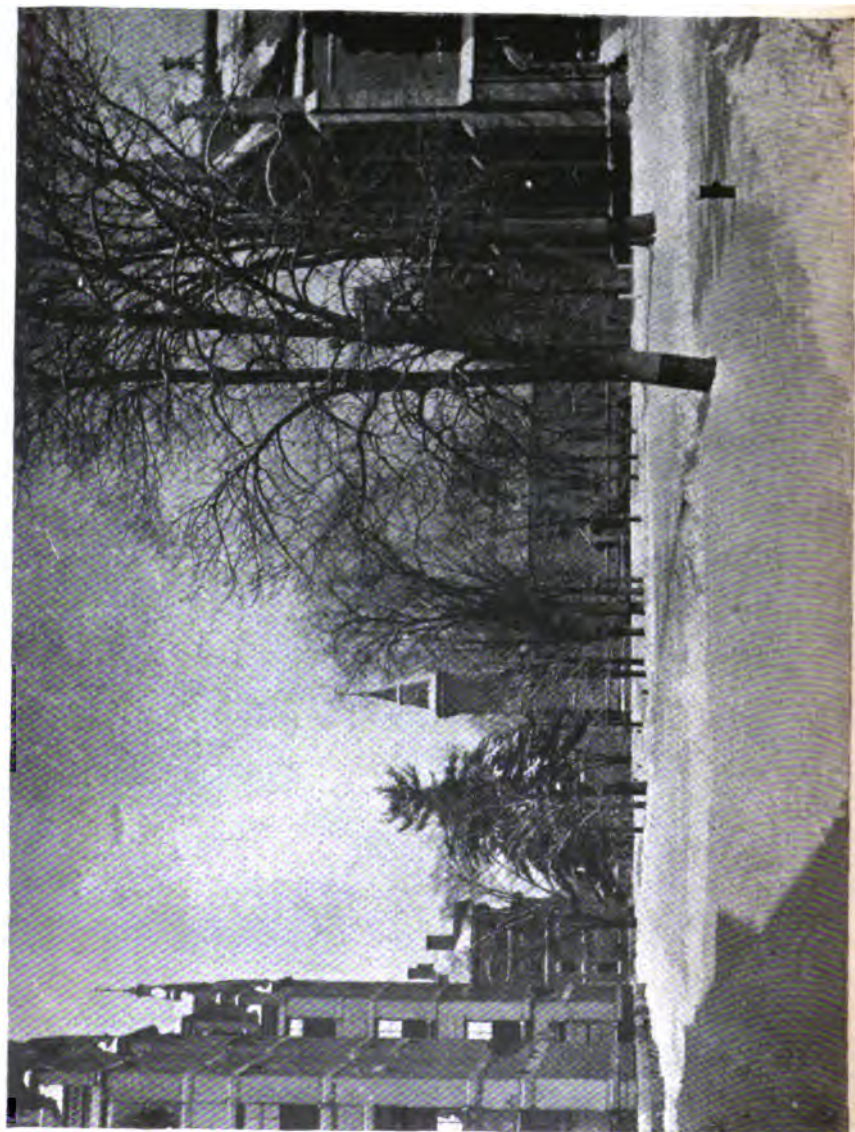
for their unceasing interest in all that pertained to its welfare. These were men like Chief Justice Sewall, Thomas and William Brattle, Treasurer Danforth, Joseph Dudley, Justice Walley, of the supreme court, the Rev. Ezekiel Rogers, and Thomas Hollis. Other names will be recalled, like that of William Stoughton, lieutenant-governor of the province and chief justice in the "Salem delusion" trials, who gave £1,000 in 1698 for the erection of Stoughton Hall; John Winthrop, the Saltonstalls, father and son, whose views of civil and religious liberty were in advance of their age; Robert Keyne, Edward Hopkins, Israel Stoughton, father of William; Henry Webb, William Brown, John Bulkley, and, across the water, Robert Thorner, whose donation turned Mr. Hollis's thoughts toward Harvard College; the Rev. Theophilus Gale, who gave his valuable library; Matthew Holworthy, a merchant of Hackney, in the county of Middlesex, England, whose bequest was the largest gift in money (£1,000 sterling) made to the college during the seventeenth century; and Dr. John Lightfoot, the eminent English divine and oriental scholar, who, at his death in Ely, December 6, 1675, bequeathed to Harvard College "his whole library, containing the Targums, Talmuds, Rabbin, Polyglot, and other valuable tracts relative to oriental literature." Of this collection only incidental mention is made in the account of the loss of the college library by fire in 1764, but its destruction must have been considered a very serious disaster by the friends of the college. Worthy to rank with these generous donors are also the names of many educated women who at a very early period began their benefactions to the college, and continued them until after the close of the colonial era.

But among all the generous friends of the college there was none whose name is so worthy to be placed upon the same scroll with Harvard as Thomas Hollis. As a citizen of another land and a believer in another theology from that held by the founders of the college, his unselfish and Christian catholicity of spirit make him a unique figure among all the benefactors of his age. Pure philanthropy found in him one of its fairest exponents—men who so rarely bless our world that we are apt to look upon them as phenomena. From 1719 until his death in 1731 he seems to have regarded the college somewhat as a father might a favorite child. His interest in it was "general, constant, and unswerving." He was specially desirous that a good library should be provided for it. To this end he was ever searching in the bookstalls of London for choice and costly books to send out to New England. He it was who first suggested the need of a catalogue of the books in the library, a suggestion that was at once approved and acted upon by the corporation. In addition to the divinity professorship, Mr. Hollis, in 1726, founded the professorship of mathematics and natural philosophy, and gave for it what was thought to be a liberal endowment for the time. Besides, with remittances made by him and in accordance with his directions ten scholarships were established for poor scholars, yielding

each £10 a year in Massachusetts currency, or a little more than £3, English sterling. At his death he had contributed in various ways nearly £6,000, Massachusetts currency, besides many valuable books. For years thereafter his heirs, in the same generous spirit, continued by an "ever-flowing fountain" of princely giving to keep fresh in the hearts of all lovers of Harvard College the name of Hollis. The generosity of Thomas Hollis was also of great service to the college in later times by putting it into the hearts of the successful merchants of Boston and other cities to emulate his example.

But a Hollis, a Holworthy, and others we have named by no means exhaust the list of England's benefactors to Harvard College during the first century. Gifts flowed from England in a constant stream from the origin of the institution to a period subsequent to the Revolutionary war. These acts should be gratefully remembered in New England, as they were evidently void of all personal interest, being prompted simply by a love of learning, religion, and freedom.





WELD HALL.

THAYER HALL.

APPLETON CHAPEL.

MEMORIAL HALL.

GORE HALL.

HARVARD COLLEGE - THE LARGE QUADRANGLE AFTER A SNOW STORM.

CHAPTER III.

THE MIDDLE PERIOD OF HARVARD COLLEGE.

THE GROWTH OF INDEPENDENCE.

From the close of Wadsworth's presidency in 1737 until the beginning of the nineteenth century the history of Harvard College furnishes comparatively little material for special record. During the first part of this period the early traditions of the college were mostly followed, and the routine of student life and the disturbances which had characterized the college during the first third of the eighteenth century underwent but little change. But long before the mother country had declared war upon her American colonies the fires of patriotism had been kindled among the young men of Harvard, and when the call of liberty sounded out through the homes of New England and the first blow was struck at Lexington, no more ardent American patriots could be found than the men who had been nurtured within the walls of the college. This inculcation of the principles of liberty and independence of thought was the distinguishing work that Harvard did in the eighteenth century, and no higher praise can be bestowed upon her than this, that when her country most needed soldiers and statesmen they were found in the ranks of her sons, and were of the bravest and best that our country has seen. Such were Samuel and John Adams, Joseph Warren, John Hancock, Jonathan Trumbull, Timothy Pickering, and many others whose names are among the most familiar and renowned in the early history of the Republic.

MORE LIBERAL VIEWS IN THEOLOGY.

The religious controversy which divided the friends of Harvard into hostile camps in the early part of the century was continued at intervals throughout this period of which we are treating and far into the succeeding one. This feeling manifested itself especially when any new chair was to be filled. Upon such occasions the opportunity was improved by the high or orthodox Calvinists to look closely into the religious principles of the candidate, and when these were not satisfactory according to their standard to put obstacles in the way of his confirmation. It seems, however, from the evidence at hand, that among the most influential classes there was a growing liberality of thought upon theological questions. That those who held these views had a preponderating

influence in the college in 1737 is shown by the election of the Rev. Edward Holyoke to the presidency, whose candidacy was strongly opposed by the high Calvinists. In the following year, upon the election of John Winthrop as Hollis professor of mathematics, the same members of both boards who opposed the election of Holyoke attempted to secure an inquiry into Winthrop's religious beliefs, that they might thus establish a precedent which should be followed in the future filling of college chairs. But in this effort they were unsuccessful, and it would seem therefore that from this period dates the beginning of the process of emancipation from the earlier and, as we must now regard it, narrower creed which was so dear to the hearts of the first settlers in New England.¹

With the growth of our institutions it was inevitable that this change should come, but to the advanced position taken by Harvard College much credit is due for the early acceptance of these liberal though orthodox views.

At this period the supervision of the board of overseers did not end simply with an inquiry into the religious status and character of the professors and tutors at the time of their election. They judged rather that they could best magnify their office by criticising the manner in which the departments were conducted. It would seem, for instance, that they thought themselves more competent judges of how a topic should be treated, or of what length a discourse should be, than the board of instruction, since in 1740 they took it upon themselves to recommend to the professor of divinity that in the delivery of "his public lectures *he be more concise* in the several subjects he treats upon."

The visit of the Rev. George Whitefield to New England in 1740, and the controversies that arose in regard to the doctrines he taught, made it evident to all that Harvard college had departed widely from the position held by Jonathan Edwards and other leaders of the Calvinists. The leading exponents of the new doctrines were the Rev. Charles Chauncy, who was pastor of the First Congregational Church in Boston, and the Rev. Jonathan Mayhew, who was graduated from Harvard College in 1744. The governors of the college gave no public countenance to these views of Chauncy and Mayhew, but they were on terms of intimacy with them, and the leaders of the Calvinists perceived with alarm that potent influences were at work which were already arousing the spirit of free inquiry and radically changing the theological views of the laymen and influential classes in New England. Dr. Chauncy warmly defended the college from the charge of Edwards, that there was want of due care in giving to the students religious instructions, and

¹In 1739 the corporation examined a tutor, and not until his religious beliefs were found to be satisfactory was his election approved by the overseers. It is suggested by Mr. Peirce, the historian of Harvard College, that at this time the tutors were required to perform religious services in the chapel and give religious instruction in their respective classes, and that this may have been the ground for such action on the part of the corporation and overseers.

maintained rather that it was under "good regulation," and that during the 20 years since he had known its history it had never been in a better condition "in point of religion, good order, and learning than at this day."

To those who were dissatisfied with the liberal theology, which was more and more finding acceptance among the friends of Harvard, the college at New Haven afforded a welcome refuge. This college had been founded by those who at the beginning of the eighteenth century were out of sympathy with the prevailing religious views entertained and accepted at Harvard College, and now after a half-century, in the year 1752, their successors, the Calvinists of Massachusetts, turn to it again with the avowed purpose of "settling and securing orthodoxy" there "upon the best foundation that human wisdom, directed by the general rules of God's word, could devise." As a result of this action Yale College sent out for many years a larger number of graduates than Harvard.¹

About this period (1747) occurred the death of the Rev. Benjamin Coleman, one of the most loyal friends and able counselors that the college ever had. It was largely through confidence in him that Mr. Thomas Hollis was disposed to give so liberally to the college. He was also instrumental in influencing Mrs. Holden to make so generous a donation for the building of the chapel. To him, with Leverett, Pemberton, Wadsworth, and one or two others, we are to assign much of the credit for the prosperity which attended the college during his lifetime. He was unremitting in his endeavors to place its religious character on "the broad foundation of the Sacred Scriptures," holding that the right to construe them was "inherent in every individual independent of man's authority." Chiefly through his wise counsels the college was carried triumphantly through the great religious crisis which agitated it during the first half of the eighteenth century. The principles which he maintained with such earnestness and ability have ever since been supported by the college, being adopted as the standard for its moral government.

A contemporary of Coleman's, and a survivor for many years, was the Rev. Edward Wigglesworth, the first who was called to the Divinity Professorship in Harvard College. He was elected to this position in 1722, and continued in the same until his death in January, 1765. From the vantage ground of his position he was able to exert, and did exert, a powerful influence upon the thought of his time. The imprint of his theology was so marked as to be recognized in the teachings of the college and her sons for many years after his death.

Upon his election to the Divinity Chair he had signed no test nor given any bond for adhesion to any sect or party. Clear in argument, candid and impartial in his judgment, the credit is given to him of being

¹ A comparison of the attendance at Harvard and Yale shows that from 1745 to 1755, inclusive, 194 were graduated from Harvard, and 179 from Yale; and again, that from 1753 to 1760, inclusive, 205 were graduated from the former, and 254 from the latter.

one of the first who dared publicly to question some of the cherished doctrines of high Calvinism. He belonged to that class of divines who believed that the Protestant churches had not yet reached the utmost point of reform; and he was disposed to labor to bring them into a nearer approach to the only true and original standard, the Holy Scriptures unincumbered by the schemes, systems, and inventions of men.¹

A life-long associate of Wigglesworth was "Tutor Flynt," whose death occurred in 1760. He had been instructor in the college for upwards of 55 years, and was one of the best-known characters of his day. In addition to his college duties he was an occasional preacher, and published a volume of sermons.

Mayhew was his pupil, but the asperity which was often displayed in the writings of the latter were not suited to the gentle and more impartial spirit of the teacher.

For nearly 40 years after Prof. Wigglesworth's appointment as Divinity Professor the college appears to have had "no system of divinity or ethics." Twice in the year 1759 the overseers recommended that the corporation speedily introduce some system, and as a result in the following May "the president read several votes of the corporation, whereby it appeared that suitable care was taken of that matter."

The controversies which divided the Congregational churches during the middle and later years of the eighteenth century gave increased hopes to the adherents of the Church of England that the influence which they had earlier sought in the ecclesiastical councils of the New England Colonies might at length be acquired. They were therefore believed to be cherishing the design which they had openly avowed in 1725, of claiming seats in the board of overseers as "teaching elders."

This project of establishing the Church of England with an order of bishops in North America was for the time abandoned, but had it been successful and had the church obtained such a control in the affairs of the college as it desired, we can readily see that this might have changed not alone the religious history of the college, but much more than that, by being identified with the Church of England, the sons of Harvard, might have been led at the breaking out of the Revolutionary war to attach themselves to the cause of the mother country, and thus by the weight of their influence have changed the political fortunes not alone of Massachusetts, but of all the United Colonies.

In 1762 the friends of Harvard College were much alarmed by the attempt to establish a rival institution of learning in the western district of Massachusetts.² This movement of the Calvinistic party in the colony was opposed by the legislature, but met with the favorable consideration of the governor of the province. Hence it was believed (or at least a pretense was made) by some that a coalition had been formed by the friends of the measure with the governor, and that it was a deep-

¹ Appleton's Funeral Discourse upon Mr. Wigglesworth.

² See Peirce's History, p. 247 *et seq.* See also The College Book.

laid plot "for sending a bishop into these parts." When the governor was remonstrated with for having promised a charter for the new college he gave the remonstrants to understand that the subject should be referred to the ministry in Great Britain. Upon this a circular letter was prepared by the friends of Harvard College, in which the ground was taken that the governor was not empowered to grant such a charter. This act is to be noted as showing the growing spirit of independence which had begun to actuate the leading men of Massachusetts. The letter referred to was sent to such influential men in England as were most friendly to Harvard College, and by this means the scheme for a new college in the province was for the time defeated. Its promoters assigned as the principal reason for its establishment "that the governors of Harvard College neglect to propagate orthodox principles of religion and vital piety, and that a principal end proposed in founding another seminary is to remedy this supposed defect in the present method of education." This insinuation "rankled in the minds of the friends of Harvard," and doubtless added to the alarm felt by such as still held fast to the creed of the early Puritans.

Although the leading friends of the college were evidently in sympathy with the liberal tendencies of the times, still it may also with truth be said that the sectarian position which it had hitherto maintained was virtually unchanged up to the time of the Revolution. As an indication that soon after this period a different spirit found acceptance in the college, we find that, in 1798, students of the Episcopalian faith who had formerly been compelled to attend religious services in the chapel were given permission to attend the Episcopal church at Cambridge.¹

Moreover, at a date preceding this, and for the first time in its history, a candidate for a place in the corporation was chosen who was neither a clergyman, professor, nor tutor. These were evidences that the college was becoming emancipated from its early ecclesiastical and sectarian traditions.

COLLEGE LIFE.

The laws of 1734, to which we have already referred, appear to have sufficed for the government of the college for a number of years. Still the disorderly tendencies which were so prominent during the latter part of the first century continued to characterize to a certain extent the life of the college far into the eighteenth century. These disturbances resulted in large part from the students frequenting "ale houses" and indulging too freely "in wine, strong beer, and distilled spirits." Especially was this true at commencement. This day had become a holiday throughout the province, and in Boston the shops were usually closed and business suspended. The public common at Cambridge was covered

¹ In 1828 the privilege extended to Episcopal students was extended to those of all denominations, and seats are now furnished at the expense of the college to those students who may wish to attend services in any church in the vicinity.

with booths erected to accommodate the people from Boston and the neighboring towns, and the amusements and refreshments of a fair were furnished, in which gambling, rioting, and dissipation of all kinds prevailed. As these disorders were wholly incompatible with the idea of a literary celebration, regulations were made from time to time by the government of the college to limit their expense and render the occasion less noisy and riotous. But the views of the corporation and overseers respecting the measures to be employed did not harmonize, and this weak dalliance augured ill for the reforming of these abuses.¹

In their efforts to do away with these exhibitions of insubordination there seems to have been no appeal to the higher moral sensibilities of the students because of the damaging effect such courses would have upon their character, but the reason for such demands was placed upon the insufficient grounds that the necessities of life were so dear; or possibly that there was a distressing drought which they apprehended to be such "a judgment of God as calls for fasting and mourning;" or again, "in consideration of the dark state of Providence with respect to the war we are engaged in."

In 1757, at the time of the war with France, and when there was a most alarming drought in New England, both the observance of commencement and the festival attending it were omitted, and the candidates received their degrees though absent. So again in 1760, by a vote of both boards, all unnecessary expenses were forbidden, as also dancing, either in the hall or in any of the college buildings, during any part of commencement week. The president was specially charged to exercise a rigid censorship over the parts assigned for commencement and to expunge therefrom all that was objectionable, and particularly "to put an end to the practice of addressing the female sex."

But the action of both boards during this period was weak, vacillating, and contradictory. As evidence of this it is stated that soon after the date we have named, permission was given the students, not only to furnish punch to their guests at commencement, but also at any other time provided it was done "in a sober manner." The plausible reason given was that this drink, as then usually concocted, was "no intoxication."

¹Sometimes the evils to be remedied by the governing boards of the college were "the breach of the Sabbath, more especially in time of public worship." The remedy for the latter was to have "tutors sitting in the meetinghouse so as more conveniently to oversee the scholars." Again it was complained that "the costly habits of many of the scholars, their wearing gold or silver lace or brocades, silk nightgowns," etc., had a tendency to discourage parents from giving their children a college education, and moreover that it was "inconsistent with the gravity and decency proper to be observed in this society."

This complaint is followed a little later by a report of "riotous disorders frequently committed on the quarter days and evenings," and that on one such occasion, viz. in 1764, it was carried so far that "the windows of the tutors and divers other windows were broken," so that thereupon the observance of quarter days was abolished.

Among other evil tendencies to be combated mention is made in 1762 of theatrical exhibitions, although there were as yet no established theaters in Boston.

ting liquor," though no limitations were made as to the ingredients or properties of the mixture.

During the presidency of Holyoke the commons continued to be a constant source of embarrassment to the authorities of the college. Occasionally the seeds of discontent sprang up into brief rebellions, and in 1766 one of these assumed such proportions that it disturbed the affairs of the college for more than a month. The ground of complaint was usually the quality of the food and the inadequacy of the supply, but the overseers insisted that it would be for the best interests of the college as well as "prevent extravagant expense, if the scholars were restrained from dieting in private families." They approved the course of the president, professors, and tutors, and condemned in strong language the "unlawful combination of a great number of the students to force an execution of the laws of the college in such a manner as they think proper." To add emphasis to these and other resolutions, "his excellency the governor" was requested to read them to the scholars in the chapel, the overseers being present, and to "enforce them in such manner as he shall think proper." In all these transactions it is apparently fair to infer that the overseers were actuated in part by selfish motives since the profits from the commons found their way into the treasury of the college. Still it is noteworthy as an indication of the *spirit* of the students that, though all were under the necessity of paying for the commons' board, such of their number as could afford the extra expense took their meals in private families. The business of purveying for the commons fell largely to the corporation, and, as Mr. S. A. Eliot happily says, it is amusing to see term after term and year after year the formal votes, passed by this venerable body of seven ruling and teaching elders, regulating the price at which a *cue* of cider or a sizing of bread or beef might be sold to the students by the butler.

At an outbreak in the college in 1768 the overseers go so far as to take part in the expulsion of students, and fully approve the course of the "immediate government in their endeavors to restore and maintain a due subordination in the society." The occasion of this last-named disturbance, which would appear to have been one of the most violent rebellions in the history of the college, was the adoption of the simple regulation that absences from college exercises must be excused in advance.

As previously stated, when the laws of the college were revised in 1734, the right of punishing the undergraduates by "boxing" was deemed so essential to good discipline that the exercise of it by the president, professors, and tutors was expressly reserved. Twenty-one years later the overseers held that this privilege should be taken away, as no longer necessary, but in this view the corporation did not concur. Therefore the overseers appointed a large committee to consider the subject and report what punishment, if any, might be substituted for it. But from this time on the practice of boxing was discontinued, and

apparently without further action the law became void. In the revised laws of 1767, hereafter to be mentioned, it was expunged altogether.

In 1760 both boards of government favored the abolition of the custom that required the freshmen to go on errands for the older classes. However, upon trial, the experiment gave so great dissatisfaction that the overseers voted not to sanction any change. When at a later period the attempt to abolish this custom was renewed, the corporation, after much deliberation, decided that they could not "project any plan in the room of this long and ancient custom" which would not be attended with equal or greater inconveniences.

This custom, therefore, which seems abhorrent to the college life of our day, prevailed yet for many years.

At about the same period of its history great annoyance was occasioned to the officers of the college by "some of the scholars going home at one time and some at another in the spring and fall to procure clothing, as they heretofore have been permitted to do." To avoid this interruption and injury to the college work it was suggested by the corporation in 1766 that there should be short vacations in the spring and fall. This suggestion, however, did not then receive the approbation of the overseers. In this same year (1766-67) Quincy refers to a "winter vacation;" but the action of the corporation would seem to indicate that previous to this time there had been no vacation in the spring or fall.

As early as October, 1747, action had been taken towards a general revision of the college laws, but for many years, as we have seen, only temporary changes were effected; but at length, in 1766-67, so pressing had become the demand for a revision—reinforced by the strong objection of parents to pecuniary mulcts, since the penalty fell upon them rather than upon their sons—an eminent committee, consisting of such men as Lieutenant-Governor Hutchinson, Dr. Chauncy, Dr. Mayhew, and Secretary Oliver, was appointed to consider the feasibility of some other method of punishing offenders. This committee advised against abolishing fines altogether, but recommended that they should be less in amount and less frequently resorted to, and that other methods of restraint should be gradually introduced. The system thus adopted, and improved in the course of years, became the basis of that form of government which has prevailed not only in Harvard, but in American colleges generally since the abrogation of fines. According to this, discipline is maintained by private and public admonition, by exhortation to duty, by notification to parents, by exacting at a subsequent time the performance of duties that have been omitted. Confinement with strict attendance to college duties was also a form of penalty recommended and sometimes practiced.

The period of which we are writing was characterized by many other improvements, largely due to the influence of the able men who then guided the action of the board of overseers. Only a few years later a custom

which had existed from the establishment of the college was laid aside. This was the arranging of the students in each class according to the supposed rank of the families to which they belonged. As the practice had been the cause of much bitterness of feeling on the part of many of the students, the overseers in 1773 decreed that it be discontinued, and that thereafter the names of the members of each class should be printed in alphabetical order. This arrangement of the names has since prevailed.¹

For seven years preceding the Revolutionary war, as also during its continuance, attempts were made with varying success to improve the discipline in the college and raise the standard of education.

During the war there was often extreme difficulty in finding a suitable steward and in providing satisfactory board for the students in the commons. In 1779 the tutor in mathematics, Mr. Caleb Gannett, was induced to accept this office, and he continued to hold it for nearly 39 years.

In 1786, in order to lessen expense, the authorities of the college determined to prescribe a uniform system of dress. What the color and form should be were minutely set forth, and it was ordered that the several classes should be distinguished by frogs on the cuffs and by the button-holes. Only cloth of home manufacture could be used. Events however soon showed that the students of that day did not take kindly to the wearing of uniforms. In view of that fact the immediate government saw that the regulation must needs be enforced under the severest penalties. Finally, in 1797, this distinction in dress became so obnoxious to all the classes that the law governing dress was so far abrogated that only a blue-gray or dark-blue coat was required, with permission also to wear a black gown. The wearing of gold or silver lace, cord, or edging was prohibited.

The early custom of going uncovered in the college yard became, under the republican ideas which the youth had inculcated, very diffi-

¹ Judge Wingate, when at the age of about 91, gives the following account of this custom as it existed in his college days; that is, at a period some 15 years previous to its abolition. The freshman class, he says, was usually placed within 6 or 9 months after admission. "The official notice of this was given by having their names written in a large German text in a handsome style and placed in a conspicuous part of the college buttery, where the names of the four classes of undergraduates were kept suspended until they left the college. * * * The scholars were often enraged beyond bounds for their disappointment in their place;" but they soon took their "station according to the new arrangement at recitation, and at commons, and in the chapel, and on all other occasions; and this arrangement was never afterward altered either in college or in the catalogue," however much the rank of the parents might meanwhile have varied. Although the honor of a place in class was chiefly ideal, yet there were some substantial advantages. The higher part of the class had generally the most influential friends, and they commonly had the best chambers in college assigned to them. They also had a right to help themselves first at table in commons, and I believe generally, whenever there was occasional precedence allowed, it was very freely yielded to the highest of the class by those who were below."

cult of enforcement.¹ Its repeal, which followed before the close of the eighteenth century, may be said to mark the transition to that new standard of action which came with the establishment of the Republic and found acceptance within college walls, as well as in the homes of the people and in the public affairs of the nation.

COLLEGE BUILDINGS AND FINANCES.

HOLDEN CHAPEL.

The noble benefactions to the college in the first century of its history were as the seed sown in good ground, which was destined in the coming years to bear an abundant harvest. These early friends, as we shall see, were but the pioneers in a long list of generous and great-souled donors. Among these was the widow of Samuel Holden, late a merchant of London and governor of the Bank of England, who in December, 1741, gave £400 sterling "to build a chapel for the use of Harvard College." Samuel Holden was the acknowledged head of the Dissenters in Great Britain, and thus it happened that he became interested, principally through the representations of the Rev. Dr. Coleman, in the success of the Puritans of the Massachusetts Colony. All the benefactions of this family in the province amounted to more than £10,000 currency.

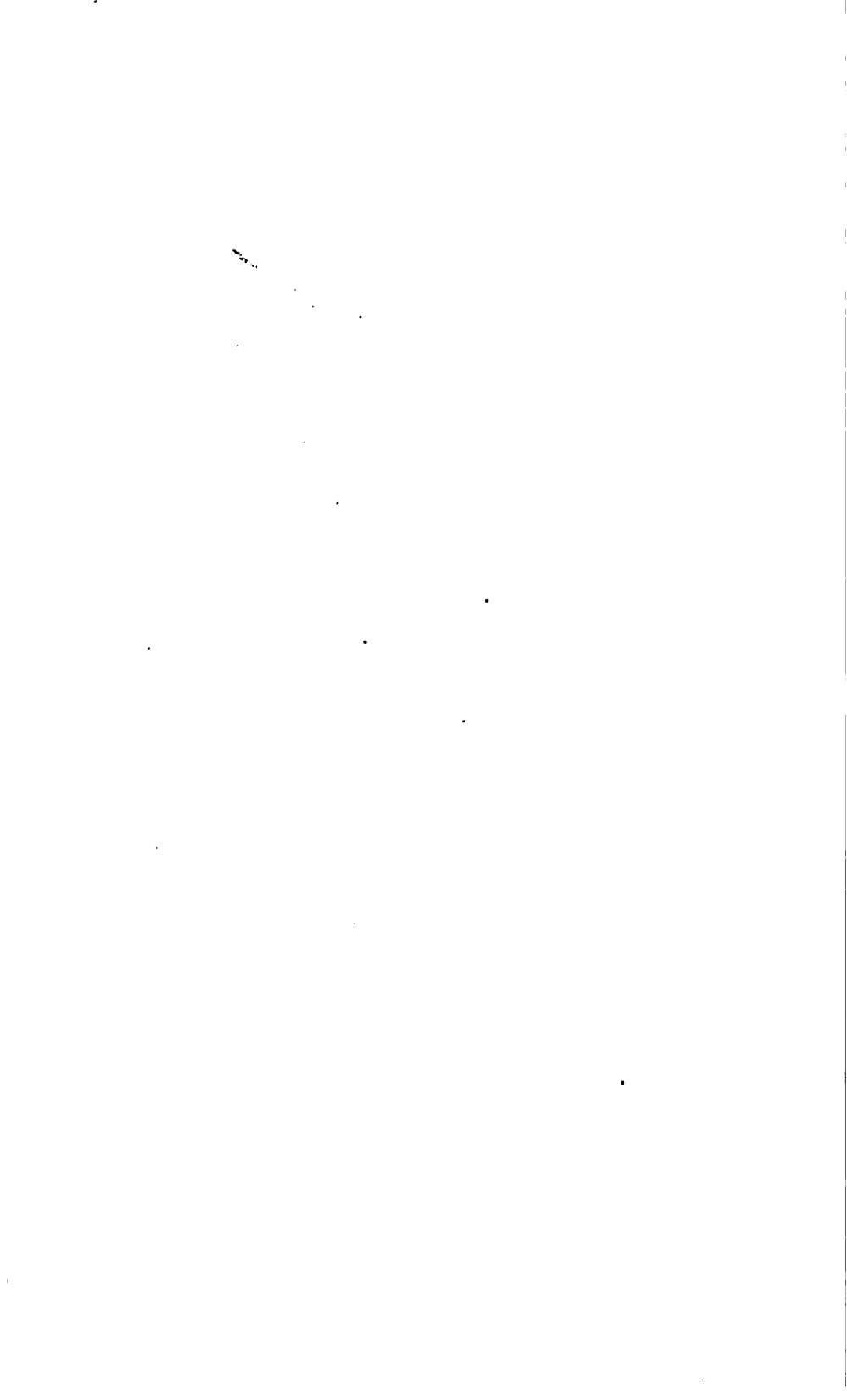
HOLLIS HALL.

The wars of the mother country with France in 1745 and 1756 awakened intense interest among her loyal sons in New England, and an enormous debt was created by the Colony of Massachusetts for the purpose of defending her frontier and carrying the war into Canada and Acadia. As a consequence great financial embarrassment followed, and this, aided by sectarian jealousies, greatly lessened the number of students in Harvard College. When, however, peace was restored an uncommon tide of prosperity set in, and soon the halls of Harvard were overflowing with students, and more than ninety were obliged to board in private families. Under these circumstances a new building was deemed indispensable. Accordingly, in 1761, the legislature was petitioned to assist in its erection. This petition was favorably received, and on June 12, 1762, the legislature appropriated "£2,000, to be applied towards building a new college at Cambridge of the dimensions of Massachusetts Hall." By another resolve on the same day £500 sterling was voted for the purchase of nails, glass, and other materials in England "for the building of the new college in Cambridge." A committee of five each, from the council and house, was appointed to meet the corporation of the college and decide upon a site for the building

¹ Judge Wingate complains of the lack of subordination in college in his old age, and contrasts the manner of *his* day, when the students went uncovered in the college yard, greatly to the disadvantage of later times. As to whether there was less of the genius of republicanism in college before the American Revolution, he took the view that in his day "the government of the college was a complete aristocracy."



HOLDEN CHAPEL AND CLASS TREE.



and arrange for its erection. This committee, which was composed of some of the best men in the colony, acted with such promptitude that in December, 1763, an ample building "well completed and finished in the best manner," was presented to the general court for their approval with a statement of the expenses incurred. These amounted in all to more than £4,800 lawful money. The legislature approved the "assiduous and faithful services" of the committee and voted without cavil to defray the amount of expenditures in excess of the estimate and of the former appropriation. On January 13, 1764, both branches of the legislature met in the college chapel, and Governor Bernard, at the request of the president, gave the building the name of Hollis Hall. The legislature voted that the rooms and cellars should be let so as to produce a rental of £100, £10 of which was to be reserved to keep it in repair, and the remainder applied "to the support of tutors and the purchase of books for the library."

HARVARD HALL.

On January 24, 1764, a great calamity fell upon Harvard College. Harvard Hall, the most valuable of all the academic buildings (the others were Massachusetts, Stoughton, and Hollis Halls, and Holden Chapel), and containing the best library and philosophical apparatus in America—the collections and donations of more than a century—was totally destroyed by fire.

Nothing daunted, the men who had planned and carried to completion Hollis Hall now united in recommending the immediate rebuilding of Harvard Hall. They found no difficulty in enlisting at once the sympathy and coöperation of the governor of the province and the legislature associated with him, and especially for this reason, that on account of an epidemic of smallpox in Boston, the legislature was occupying the hall at the time of the fire. This body made at once a grant of £2,000 and voted further that the hall should be rebuilt at the expense of the province. This was done, and a building costing \$23,000 was completed in June, 1766, having been located on the identical spot where the former Harvard Hall stood. Only the western half of the upper story was set aside for the library, which was placed in ten alcoves, five on each side. The remainder was appropriated to the use of the philosophical room and museum and for the commons hall and chapel.

Among the generous givers to the library fund was John Hancock, who, in order to carry out the intent of his uncle, Thomas Hancock (whose entire and large estate he inherited), donated £500 sterling, to which sum he afterwards added £54 14s. With this donation of Hancock's, 1,098 volumes were purchased, and placed in an alcove specially reserved for them.

In 1778, the books which had been confiscated from Tory refugees, numbering in all about 400 volumes, were presented by the legislature to the Harvard library. Among other donors were Governor Bernard,

who gave more than 300 volumes of books and 10 guineas in money; and the Hon. Thomas Hubbard and William Greenleaf, who donated money, books, and philosophical apparatus. Altogether over £850 sterling was given in money besides the amount received from John Hancock.

But in a calamity of this kind the first instinct of the colonists was to turn to Great Britain for assistance. England was still to them the old home, and their expectations of sympathy and help were never disappointed. Persons of different denominations, churchmen as well as dissenters, vied in generosity to the college. Thus it happened, as often, that what appeared at the moment to be an irremediable calamity was really Janus-faced, and only time was needed to show that it was a blessing in disguise. Among the most ardent of these friends was Jasper Mauduit, esq., secretary of "the society for propagating the gospel in New England and parts adjacent." This society, which was organized by the Dissenters, principally for the conversion of the Indians to Christianity, gave the sum of £300 sterling for the purchasing of religious books. With this sum the secretary purchased 1,101 volumes, enough to completely fill an alcove, and he added to this a generous donation of books and money, the personal gift of himself and brother.

Another true friend of Harvard College was Thomas Hollis, esq., of Lincoln's Inn. He was the nephew and heir of the first benefactor of that name, and a man of kindred spirit who devoted his life and fortune to acts of beneficence. He took unwearied pains to collect and present to the college the best books in various languages, ancient and modern, and in all the departments of science and literature. During his lifetime his gifts to the college are thought to have exceeded £1,400 sterling. At his death he left a bequest of £500 as a fund, and directed that the income be applied to the purchase of books.

During Holyoke's presidency two new modes of aiding the college were introduced by the general court. One of these (the first of its kind) was an act passed in June, 1772,¹ "for raising by lottery the sum of £3,200 for building another hall for the students of Harvard College to dwell in." The excuse for this action was that the general court had just been to great expense in building Hollis Hall and in rebuilding Harvard Hall, and that no further provision out of the public treasury could be expected; therefore, "that no other resort is left but to private benefactions, which it is conceived will be best excited by means of a lottery."²

The other mode of adding to the funds of the college was by giving it an interest in grants of land in the province of Maine. The first donation of this kind was made in 1762, and this was followed by others

¹ In Peirce's History of Harvard University, and in "Harvard College and its Benefactors," the time of this act is placed in 1765.

² On account of the disturbed state of public affairs the lottery tickets met with only a limited sale, and those remaining were returned to the college.

from time to time until 1769. These grants were of one sixty-fourth part of twenty-five townships, and of one eighty-third part of the township adjoining.

During President Locke's brief administration (1770-1773) many valuable contributions were made to the funds of the college, both by the legislature and by individuals. Of these a goodly number were from Edinburgh and London, a fact not a little noteworthy if we reflect upon the aspect of public affairs at that time.¹

Since the founding of the Mathematical Professorship² by Mr. Hollis,

¹ Consult Quincy's History, vol. i, p. 136, et seq.; also vol. ii, chap. 30, for a list of the benefactors of Harvard College in the years preceding the Revolutionary war.

² It is fitting that some mention should be made of Professor Winthrop, who so long held this professorship, and who, by his eminent services, both reflected credit upon the college and showed the exceeding great benefits arising from Mr. Hollis's foundation:

Among the earliest in our country to gain distinction for scientific attainments was Prof. John Winthrop, a descendent of the first governor of the province of Massachusetts Bay, and one of the ablest men who have ever been honored with a chair in Harvard College. Graduating from Harvard in 1732, he received, 6 years later, the appointment of Hollis Professor of Mathematics and Natural Philosophy. For 40 years he held this chair, and the zeal and talent with which he applied himself to the advancement of those sciences, and his superiority as a skillful and attractive lecturer, did more for the reputation of American scholarship among the savants of Europe than the service of any other American scholar during the first 150 years of our history, save that of Franklin alone. As early as 1740 he began a correspondence with the Royal Society of London, by transmitting "observations of the transit of Mercury over the sun." These were published in their Transactions, and also favorably noticed in the *memoirs* of the Royal Academy of Arts and Sciences at Paris. At various times he gave lectures or read papers upon the phenomena of earthquakes, upon the identity of electricity and lightning, and the protection against the latter to be derived from "*iron points*," supporting the theory of his friend Benjamin Franklin.

In 1759, on the appearance of a remarkable comet, he stated, in two lectures delivered in the college chapel, the principal hypotheses concerning these wandering bodies, and explained the true theory of their nature and motions according to the latest discoveries. In 1760 and 1761 he transmitted to the Royal Society accounts of a whirlwind which had occurred, and of "several fiery meteors which had been seen in New England."

In May, 1761, the government of the Massachusetts Bay placed a sloop at his service, that he might proceed to Newfoundland, carrying with him all the apparatus of the college requisite for his design to witness the transit of Venus across the sun's disk in the following month. His observations were successfully made, and their result enabled him to predict with certainty another transit of Venus on June 3, 1769. Reports of the transits of 1761 and 1769, and of that of Mercury in October, 1743, and November, 1769, were transmitted to the Royal Society and published by them. Other papers were prepared on the two comets of 1769 and 1770, the latter of which he concludes to be a new comet, making the number then known to be fifty-seven. There are other letters to Franklin showing the breadth of his researches on "the aberration of light," apropos of the transit of Venus; and to the Royal Society in vindication of Sir Isaac Newton, relative to a passage in Castillon's Life of Newton. But his mathematical and philosophical pursuits were but a portion of his activities. His knowledge was various and extensive, and Quincy, with apparent

in 1726, very little had been received by the college for the purpose of establishing new professorships; but in 1770 and 1771 Dr. Ezekiel Hersey and Nicholas Boylston, esq., laid each the foundation for professorships which some years later, when the funds had sufficiently accumulated, were established and conducted in accordance with the design of the founders.

Another noted benefactor of Harvard was James Bowdoin, who was governor of Massachusetts from 1785 to 1787. He was chosen the first president of the American Academy of Arts and Sciences, was president of the Humane Society of Massachusetts, and Fellow of the Royal Society and of many other societies in America and in Europe.¹

The Donation Book, which contains "an account of grants, donations, and bequests to Harvard College" from its foundation to the year 1773, had for its object to perpetuate the memory of the benefactors of Harvard College. To this a second volume has been added. In the year just referred to the custom was introduced of making mention at commencement of the benefactions of the preceding year and honoring the noble givers by laudatory orations.

If we summarize the benefactions received by the college from the earliest period to 1780, we shall see that from 1650 to 1710 there was contributed out of the public treasury \$8,540; and by individuals in America during the same period \$22,664.94; and by those in England \$14,808.89. Between 1710 and 1752 the colonial government gave to the college \$11,220.11, and individuals \$18,437.07. From 1752 to 1780 the legislature voted \$48,314.08, and from individuals there were gifts amounting to \$34,501.02.

The contributions from the colony were in money, lands, or taxes; and from individuals in money, lands, produce, books, apparatus, articles of curiosity, pieces of plate, etc., upon a part of which no valuation was ever placed.

In addition to what has been already named, the legislature donated to the college 4,300 acres of land (but of this 1,000 acres was never received), and individuals 3,793 acres.

Altogether, if we compare the sources whence the gifts to the college previous to 1780 came, we shall find that individuals in America and England contributed about three times as much as was granted by the Colonial legislature.

In 1777 the Continental and State paper began to be the established

justice, says that "he is perhaps better entitled to the character of a universal scholar than any individual of his time in this country."

He was also specially interested in governmental affairs, and held office as a member of the council of the province and delegate to the Provincial Congress, convened at Watertown, Mass., in 1775. From the latter year until his death, in May, 1779, he was also honored with the office of judge of probate.

¹ For other donors to Harvard College see Quincy's History, vol. 2, pp. 407 *et seq.* See also Appendix to Quincy's History (Donations to Harvard College before 1780), p. 525, *et seq.*

currency in Massachusetts. As the treasurer of Harvard was directed by the corporation to invest the funds of the college in these securities, and, as they began speedily to depreciate, the college suffered serious loss and the governing boards became greatly alarmed concerning the fate of its finances. And well they might, for in a short time such was the decline in the currency that a ream of paper cost \$500, a quill \$1.50, and a dinner over \$50.

It was shown by the statement of Treasurer Storer, in June, 1786, that the college had in this way lost three-fifths of its capital, and that all its appropriated and unappropriated funds did not then amount to more than £10,000, lawful money.

During the later years of the war the college was greatly embarrassed by the failure of the general court to make the customary grant for the support of the president and professors, and by the depreciated currency collected from the students for tuition. At the same time the prices of all the necessities of life rapidly advanced and the college was thus reduced to great "straits and difficulties."

Fortunately, however, as soon as the college felt the benefit flowing from a stable government and reviving credit it was enabled to restore to their original value the donations which had been almost annihilated during the financial embarrassments which followed the war.

The adoption of a State constitution greatly changed the political influence of parties within the State, and affected to no small degree the interests of Harvard College. From its foundation the salary of the president had been chiefly dependent upon the annual grants made by the legislature. Accordingly, in January, 1781, the corporation presented a petition praying that "a permanent and adequate salary might be annexed to the office of president of the college." But no response was given to this petition, since there was already an influential party in the general court who was opposed to making any grant of this kind. Only a few years later this party was in the ascendancy, and, after 1786, except the small annuities in lieu of the income from the Charles River and West Boston ferries, and the "bank tax" of 1814, no further grants were made until 1859.

Large tracts of land in Maine, amounting to 6,000 acres, which had been reserved by the provincial legislature for the endowment of Harvard College, and to which we have already referred, were regranted (to private individuals) by the general court, in 1785, in violation of these reserved rights. In 1787 the corporation memorialized the legislature on the injustice of this proceeding, but at the time it availed nothing. But in June, 1790, a juster spirit prevailed and this body "granted and confirmed to Harvard College 300 acres of land" in each of the townships within which the original reservations for the college had been made by the provincial legislature.

In 1785, by the building of the Charles River bridge, Harvard College lost the income on the ferry between Boston and Charlestown. This

was one of the most ancient of the colonial grants, dating back, in fact, to 1640, the year when the first president of the college was chosen. As a compensation for the loss of this income the legislature provided that for the period of 40 years (which was afterwards changed to 70 years), the college should receive out of the State treasury an annuity of £200.

When, in 1792, the West Boston bridge was built, the legislature so far remembered the interests of the college as to provide for the payment to it of an annuity for 40 years. The amount first agreed upon was £300, but this was shortly after reduced to £200. It was particularly stated that this should be set apart either to defray the cost of tuition for indigent scholars or to be used for such other purposes as the corporation might deem best.

In 1794, the general court renewed the grant of a lottery which had been made in 1772 by the provincial legislature. By means of this grant there was raised during the next ten years sufficient funds to warrant the corporation in undertaking the construction of a building of the same dimensions as Hollis Hall. This was completed in the year following, and received the name of Stoughton Hall. Its cost was about \$23,700, of which amount \$18,400 were the proceeds of the lotteries.

During President Willard's administration (1781-1804) the salaries of the professors and tutors were rendered inadequate by reason especially of the depreciated currency. In response to a memorial to the corporation, grants proportionate to their respective salaries were soon made to all these officers. But the salary of President Willard at no time exceeded \$1,400 a year, besides the fees for degrees and an occasional grant as a gift. This had never been more than sufficient, and sometimes even proved inadequate, to meet his necessary expenses. At his death a grant of \$500 was made to his family to defray the expenses incurred during his illness.

THE COLLEGE TREASURERS.

The death of the Hon. Thomas Hubbard, who for more than a score of years had been treasurer of the college,¹ took place in 1773, and John Hancock, of Revolutionary fame, was chosen to succeed him. The wealth inherited from his uncle, Thomas Hancock, his liberality and popular talents, as well as the widely known enmity existing between

¹ Among the earlier treasurers of Harvard College after Danforth (1650-1669) were John Richards (1669-1693), whose period of service covered the intervening one of Samuel Newell (1682-1686); Thomas Brattle (1693-1713), a lifelong and devoted friend of the college; Rev. William Brattle, acting treasurer (1713-1715); John White (1715-1721); and Edward Hutchinson, who held the office during the long period from 1721 to 1752, and who was succeeded by Thomas Hubbard.

"College Book No. 5, in folio," contains the records which were kept by Thomas Brattle. It would seem that the preservation of this book was unknown to President Quincy when he prepared his history of the college, since he says that College Books Nos. 1, 2, 3, and 4 are all "that have any claim to the character of 'early records.'"

him and Governor Hutchinson, served to make him a conspicuous figure among the ardent patriots of the time. It would seem, therefore, that his selection as treasurer was the result rather of the admiration of his associates for his patriotic services to the colony than of any belief in his fitness for the position to which they elected him. The event at least showed that his selection was a grave error, and involved not only much financial loss to the college but almost endless vexation both to himself and to the governing boards. More than this, Hancock's unbusiness-like methods, neglect of office, and careless use of the college funds, together with his refusal to render any statement of accounts or deliver up the treasurer's books, have left a blot on the character and fame of one of our Revolutionary heroes that we should rejoice to see effaced. Though a new treasurer, Ebenezer Storer, was chosen in 1777, Hancock's accounts were not fully adjusted and the balance due from him paid into the treasury until after his death, which occurred October 8, 1793.

During a period of nearly 30 years, dating from 1777, the finances of the college were ably managed by Treasurer Storer, who rendered an important service to the university in a time of great financial depression.¹

THE COURSE OF STUDY.

The impulse given to science and literature in England during the reign of Queen Anne extended a quarter of a century later to Massachusetts, and awakened in Harvard College an earnest desire to elevate its standard of learning. Still it was after the middle of the eighteenth century before any effectual improvements were introduced. Then began a period of uncommon mental activity and brilliancy. It was distinguished "for its orators, its philosophers, and its writers," and seminaries of learning could not long remain unaffected by the spirit of progress which was revolutionizing society.

The records of Harvard College abound in evidence of solicitude on the part of those who had the direction of its concerns. These were men such as Thomas Hutchinson, Charles Chauncy, Jonathan Mayhew, and Samuel Cooper, who were members of the board of overseers, and were especially desirous of raising the standard of education, and at the same time of giving it a more elegant and popular cast.

As if the overseers foresaw that events in the near future would create a demand for oratory, we find as an important innovation that in 1754 a

¹ The treasurers since Ebenezer Storer (the successor of Hancock) have been—

Jonathan Jackson, 1807-1810.

John Davis, 1810-1827.

Ebenezer Francis, 1827-1830.

Thomas Wren Ward, 1830-1842.

Samuel Atkins Eliot, 1842-1853.

Wm. Turell Andrews, 1853-1857.

Amos Adams Lawrence, 1857-1862.

Nathaniel Silsbee, 1862-1876.

Edward Wm. Hooper, 1876- —.

The average service of the treasurers has been 11½ years, and of the fellows of Harvard 12½ years.

committee was appointed to project some new method for promoting oratory. Here was the origin of the present literary exhibitions in our colleges. They were at first only semiannual at Harvard, and have disappeared since about 1870. In the next year the overseers voted that the usual declamations in the chapel should be discontinued, and that instead of this "the president should select some ingenious dialogue, either from Erasmus' Colloquies or from some other polite author, and that he should appoint as many students as there are persons in such dialogue, each to personate a particular character and to translate his part into polite English and prepare himself to deliver it in the chapel in an oratorical manner." This was done, and in April, 1756, six students who had been selected by the president gave in the presence of the overseers a dialogue in English that had been translated from Castalio.¹

This oratorical exhibition was exceedingly gratifying to the overseers, who called the young men into their presence and recommended them to proceed as they had begun, that they might be "ornaments to the college and an honor to their country."

In 1757 the freshmen and the sophomores began to read before their tutors on those Friday mornings when they were not required to declaim "some celebrated orations, speeches, or dialogues in Latin or English, in order that they might be directed and assisted in their elocution or pronunciation." At the same time it was required of the junior and senior classes that they should have disputations in English "in the forensic manner," without being confined to syllogisms, and that the subject of these disputations should be announced two weeks previously.

In 1766 it was ordered that at the semi-annual visitation of the committee appointed by the overseers some of the scholars should publicly exhibit specimens of their proficiency by pronouncing orations and delivering dialogues, or make such other forensic display as the president and tutors should direct.

Some years before this (1755) the committee appointed by the board of overseers complained that the method of classical instruction was not satisfactory. They recommended therefore that some effort be made to improve it and to encourage the young men to strive for higher attainments in classical studies. In response to this the overseers voted to offer prizes for proficiency in the Latin, Greek, and Hebrew languages. As it was proposed to take the money for the prizes from the income of the Hollis and other specified donations, this movement was opposed by the corporation, who held that this money could not be so applied. This board was, however, in favor of offering encouragement to meritorious students, and voted that when the quarterly examinations before the president, professors, and tutors were held, and the beneficiary funds were distributed, preference should be given to those students who excelled in their studies.

¹But Judge Wingate writes to Mr. Pierce that in his day (1753-57) there were no public exhibitions or any substitute for them.

Yet, as compared with that of later days, the college course was still meager. A more practical knowledge of Latin, and possibly of one or two other ancient languages, was acquired, but, with these exceptions, the course could not have furnished a more elaborate training or discipline than is now secured at Harvard at the close of the sophomore year. Natural sciences, philosophy, and modern literature were as yet mostly *terra incognita*. Even the classic Greek and Latin writers were but little known. Many improvements, however, were being made. In the very year referred to above (1760) public examinations were established to take place in the spring and fall in the college hall or in the chapel. These examinations were for a time at least connected with the public exhibitions of oratory.

Again, in 1761, as already before, complaint was made by the visiting committee, appointed by the overseers, that the students were not required to translate English into Latin, or Latin into English, either in verse or prose. In their report the committee recommended that more classical authors should be introduced, and made part of the exercises, and that Horace should be earlier entered upon.

In 1763 the committee report "that Horace is more in use than it has been, and that Cæsar's Commentaries hath been lately introduced, and that several classes are held to translating English into Latin once every fortnight."

In the same year, the Hebrew instructor, Professor Sewall, recommends to the corporation among other things, "that Horace be recited with a particular view to instruct the students in the rules of Latin prosody, and in the structure and elegance peculiar to the several sorts of Latin verse;" also "that Homer's Odyssey, or some other approved Greek poet, be learned, in order to indoctrinate the student in the true method of pronouncing Greek according to the quantity of syllables; and to remedy that barbarous pronunciation by accents which generally prevails."

The different steps which we have here recorded led at length to the establishment of the public literary exhibitions, which were so long held before the visiting committee of the overseers, the design of which included both recitations and oratorical exercises.

Although the governing boards could agree with apparent unanimity upon these changes that were so materially to affect the welfare of the college, it was not found so easy to carry them into effect, so little in unison were they with "the private recitations, syllogistic forms, and solemn exercises of ancient times." Ten years of struggle on the part of the overseers was necessary in order to disarm opposition, and make these reforms an accomplished fact.

Up to this period in the history of the college (1766) it had been customary for each tutor to teach all the branches of study assigned to any class, and to do this throughout the entire collegiate course; but in May, 1766, a new plan was proposed by the committee, and this was to

the effect, that one tutor should teach Greek; another Latin; another logic, metaphysics and ethics; and the fourth natural philosophy, geography, astronomy, and the elements of mathematics. There was to be a distinct tutor in elocution, English composition, rhetoric, and other belles-lettres studies. The divinity professors were to give the entire instruction in their department. This plan received the sanction of both boards, and went into operation in January of the following year, at which time the corporation voted "that each class be instructed four days successively in every week in the same branch of learning by the tutor to whose department it belongs, viz, on Monday, Tuesday, Wednesday, and Thursday; and shall attend the several tutors in rotation, whereby each tutor shall have the same class every fourth week." The classes were to continue to recite to their tutors on Friday and Saturday mornings upon the same subjects as before, that is, "in elocution, composition in English, rhetoric, and other parts of belles-lettres."

This was a most important improvement in the arrangement of college instruction. It was a benefit both to teacher and scholar. It gave the teacher time to become thoroughly familiar with his department, and it gave the student the advantage of studying under all the instructors. Heretofore the system had worked disadvantageously, since the qualifications of one tutor were often superior to those of another.

The introduction into the college of the French language as a branch of instruction was first authorized in 1780,¹ when Simon Poullin was engaged to teach such students as their parents or guardians desired, but with the understanding that the tuition fees were to be charged in their quarterly bills. A little later another tutor of French, Albert Gallatin, who subsequently became U. S. Secretary, was permitted to give instruction in the college on like terms. Soon after the regulation was established that French should be accepted as the only substitute for Hebrew.²

In 1781 the question of some plan for promoting the greatest proficiency in oratory again engrossed the thoughts of the corporation. It was decided that the students who distinguished themselves in the oratorical parts assigned them should be selected by the professors and tutors to give an exhibition of their proficiency when the overseers were present at their semi-annual visitations.

In 1783 it was proposed to offer two gold medals, with appropriate inscriptions, to each student that should excel in any of the required branches of study. It does not appear, however, from any document or tradition that prizes were presented until a few years later. Certainly there was no prize system in the college previous to the presidency of

¹ Though between 1769 and 1780 three men had been licensed to teach French.

² As early as 1733 permission to teach French had been granted by "the Immediate Government," but the corporation decided that such power was not vested in the officers of instruction, and forbade the students from receiving instruction in French.

Dr. Willard. During his presidency, according to Eliot, such a system was established and produced consequences most favorable to the development of greater earnestness on the part of the students and to the general prosperity of the institution. It does not appear that there was any fund whose income could be devoted to the giving of prizes until 1794, when that constant friend of the college, Governor Bowdoin, left a legacy of £400, with the request that the income should be bestowed in premiums, of moderate amount, upon the writers of the best dissertations, whose subjects had been assigned by the officers of the college. That the judges of the award might be wholly impartial, the names of the participants were to be withheld, and even after the award was announced only the names of the successful competitors should be published.

Not long after this the Boylston medical prize was established. The committee of award were to be physicians, appointed by the president and fellows of the university, and out of this has grown in the later history of the college two Boylston medical prizes, of an annual value of about \$200 each.

From the earliest years of the college Wollæbii's *Compendium Theologiæ* had been a prescribed study for the senior and junior classes, though with but one recitation a week. This text-book was in 1784 laid aside and Doddridge's *Lectures* substituted.

In 1785 the professors were required to exhibit to the corporation the text-books used in the college and give an account of their method of instruction, and this ceremony was to be repeated at each semi-annual meeting of the overseers. In the year just named Sallust and Livy were introduced as a part of the Latin curriculum, while in the Greek Xenophon's *Anabasis* was substituted for his *Cyropædia*, and at the same time, or a year or two later, Horace, Sallust, Cicero de *Oratore*, and Homer were substituted for Virgil, Cicero's *Orations* against Catiline, Cæsar's *Commentaries*, and the Greek Testament.

Although the curriculum was changed and enlarged, the classics formed still the principal studies of the first three college years. In addition to these studies the freshmen were taught rhetoric and arithmetic and the art of speaking; the sophomores algebra and other branches of mathematics; the juniors, as already mentioned, Doddridge's *Lectures*, and once a week a lesson from the Greek Testament; and the seniors logic, metaphysics, and ethics. The freshmen and sophomores were required to study either Hebrew or French. Throughout the college course the students were instructed in chronology and history, and required to have exercises in declamation.

About this period the custom was introduced of keeping a list of absences from college duties and of calling delinquents to account.

The "weeks of visitation," which were a marked feature of college life in the early days, passed out of vogue in the eighteenth century, and, according to authority found in "The College Book," page 15,

"no such thing as an examination of undergraduates seems to have been known in college till 1790." In the latter year the authorities ordered a revision of the college laws, and enacted a law that "there shall be annually a public examination in the presence of a joint committee of the corporation and overseers, and such other gentlemen as may be inclined to attend it."

But the object sought by this examination may be likened rather to that which is now accomplished by the offering of prizes; that is, the students whom the president, professors, and tutors determined by ballot to have most distinguished themselves had their names reported to the overseers and corporation, and further, as a testimonial of their literary merit, a record of this was placed upon the college books. It was in no wise like the annual examinations of to-day; still, even this inadequate regulation was regarded by the students as an infringement of their rights, and the senior and junior classes went so far as not only to ask to be excused from the examinations, but were guilty, besides other acts of violence, of sending a stone into "the philosophic room while a committee of the corporation and overseers and all the immediate government were engaged in examination of the freshman class."

Their request to be excused from the examination having been refused, and the disorderly conduct continuing, authority was given to the faculty to "examine the students upon oath." But this measure failed to put an end to the disturbance, and the overseers, as a further step, voted in 1796 that the examinations were useful, and recommended the adoption of a rule even more stringent than the former, viz, that after the examination the professors and tutors should decide upon the proficiency of the students, and whether any were unfit to proceed to the class next higher. Previous to this it had been customary to promote all students who had studied the specified time. The overseers further voted that no person should be admitted to a degree if his examiners believed that through "negligence and inattention to his studies he had rendered himself unworthy to receive it." But these regulations were never enforced by the corporation, and the law itself was in 1797 modified.

In 1803 the authorities raised the standard of admission to the college, and required an examination in Dalzel's *Collectanea Græca Minora*, the Greek Testament, Virgil, Sallust, and Cicero's *Select Orationes*, besides a knowledge of the Greek and Latin grammars, including prosody. The candidate for admission had to give correct translations in the required Latin and Greek authors, and show that he was well versed in geography, and in arithmetic as far as the "rule of three."

But according to Professor Norton, as quoted by George Ticknor, the examinations continued until 1825 to be only a "nugatory show." Even as late as the year just named some of the professors were opposed to examinations, and did not think the experiment "worthy of trial." It

was thought that a fine "not exceeding 33 cents" (for this had been for many years the penalty) was apparently a better device for securing diligence from the students in the preparation of their several literary exercises than the exaction of a public examination.¹

ESTABLISHMENT OF NEW PROFESSORSHIPS.

Since the founding of the two professorships by Mr. Hollis in the earlier part of the eighteenth century, the benefactions which had flowed into the college treasury had been turned into various channels. These had served to augment and more firmly establish the prosperity of Harvard College, but until the endowments of Dr. Hersey and Mr. Boylston, at a period just preceding the Revolution, to which reference has already been made, the thoughts of the generous friends of the college were not directed towards the necessity of establishing new professorships, and thus enlarging the scope and usefulness of its board of instruction.

Among the first to cherish such a design was the Hon. Thomas Hancock, a wealthy merchant of Boston. Though he was not permitted himself to carry out this design, his whole property passed by inheritance into the hands of his nephew, the patriot, John Hancock, and by him a legacy of £1,000 sterling was given to the "President and Fellows of Harvard College" to endow the professorship of oriental languages, special reference being had to the Hebrew language.²

At a meeting of the corporation held September 19, 1764, it was voted gratefully to accept this generous bequest on the condition named, and "that the professorship upon Mr. Hancock's foundation be known by the style and title of the Hancock Professor of the Hebrew and other Oriental Languages." This was concurred in by the overseers, and thus was established "the first professorship founded in New England or in America by one of its sons."

¹The present system of written examinations dates from 1857. The examination papers are published, and the results of the examinations appear in the reports of the dean of the college faculty, and these are printed with the annual reports of the president.

²From the earliest days of the college Greek and Hebrew, as well as Chaldaic and Syriac, had been taught by able oriental scholars, but, previous to 1720, no member of the board of instruction had been chosen to devote all his time to the teaching of these languages, or in fact to any one branch of learning. About that time Judah Monis, a Jewish rabbi, but later a convert to Christianity, began to give instruction in Hebrew. In 1722 the corporation voted to make him an instructor in the college with a salary for 1 year of £70. All students except the freshmen and such others as might be exempted by the president and tutors were required to attend his instruction 4 days in the week. So satisfactorily did he perform the duties of his chair that he afterwards became permanent instructor. In 1735 he published a Hebrew grammar for the use of the college, and was paid by the corporation for this service £35. At a period 20 years later it would seem that Hebrew was much less studied, for at that time (1753-59) we find that Mr. Monis "attended to the instruction of the scholars *one afternoon in the week*," but that there was then no regulation compelling attendance, and that few, in fact, received instruction from him.

June 19, 1765, Stephen Sewall, M. A., was installed first professor upon this foundation. He was required "to instruct the students in the oriental languages, especially in the Hebrew and Chaldee," and read lectures once a week in term time in the chapel on topics relating to those languages. He was also expected to give private lectures at such times as the corporation and overseers should appoint, and moreover give private instruction 2 or 3 hours a week in the Samaritan, the Syriac, and the Arabic languages.

Though by the constitution of 1780 the college was authorized to assume the title of university, there was strictly speaking only the academic department, in which was included the chair of divinity, established by Mr. Hollis. However, a few years later, that is to say in 1784, the first step was taken toward making theology a separate department of study for those who had chosen the clerical profession. At this time the second Professor Wigglesworth was occupying the divinity chair, which he continued to hold until his death in 1791, the two, father and son, having filled it for nearly 70 years. With the filling of the Hersey (1782) and Erving (1791) medical professorships, Harvard College began to be entitled to the name, which it had assumed, of a university.¹

Although the benefactions for the endowing of the medical professorships were small and wholly inadequate, yet the corporation declared it expedient to elect to these chairs "some gentlemen of public spirit and distinguished abilities, who would undertake the business for the present for the fees that may be obtained from those who would readily attend their lectures." Such was the beginning of the medical school of Harvard University.² At the election which took place at once to fill these chairs, Dr. John Warren, of Boston, was chosen professor of anatomy and surgery, and Benjamin Waterhouse professor of the theory and practice of physic. A year later (1783) Aaron Dexter was chosen professor of chemistry and materia medica.

Dr. Hersey's legacy, those of his widow and brother, the bequest of Maj. William Erving, and one or two others are still devoted to the sustaining of these three professorships.

Although the medical school was considered to form a part of the college, and to be located at Cambridge, Dr. Warren from the first gave a portion of his lectures in Boston. The nature of the study made this arrangement desirable, both from the facilities for instruction which might be better obtained there, and from the importance of securing the services of the most eminent men of the profession. After the establishment of a hospital in Boston the advantage of medical study there

¹This reference in the constitution of Massachusetts to Harvard College as a university gave sanction to the latter designation, and it has ever since been applied to the institution, except in legal instruments, where the corporate name would be required to insure their validity.

²The medical school was founded in 1782; the law school was organized in 1815-17; the divinity school in 1817; the Lawrence scientific school in 1847; the dental school in 1868; the school of agriculture in 1871, and the school of veterinary medicine in 1882.

was so evident that a strong effort was made by the professors to have the medical school removed. This was later effected, and with great advantage to all concerned.

It is to be noted that the adoption of chemistry as a branch of study was the germ of the department of natural science as later developed.

The next professorship to be added was the Massachusetts professorship of natural history in 1805, and this was in 1816 followed by the Rumford professorship.

During this period of the college, besides the establishment of professorships, provision was made by the corporation for the appointing of permanent tutors, and for their support the legislature voted to apply the income received from the West Boston Bridge. To this office Levi Hedge, M. A., was the first to receive appointment. This was in 1800. The duties pertaining to it were the same as those required of other tutors, but in case of marriage the holder of a permanent tutorship received an increase of 20 per cent. to his salary, and his place was to be supplied within the college walls by a new officer called a "regent."

CORPORATION AND OVERSEERS.

The powers, duties, mode of election, and formation of the overseers of Harvard College remained virtually unchanged from the creation of the board, in 1642, until the act of the Massachusetts legislature, in 1810, though meanwhile a State constitution had replaced the charter of the colony of Massachusetts Bay.

In 1778 the question arose upon the election of a college steward, whether the overseers had any jurisdiction in the matter. This right the overseers at first claimed, but upon an examination of the various charters and appendices this claim was abandoned and the right conceded to the corporation, by which body the choice of steward has since been made.

In the constitution of Massachusetts, framed by the convention of 1779, and adopted in 1780, three distinct articles were incorporated which have reference to the rights and privileges of Harvard College. By the first of these all the rights and privileges belonging in former times to the President and Fellows of Harvard College were solemnly ratified and confirmed to their successors forever. The second secures in perpetuity to the college all gifts, grants, legacies, devises, and conveyances, according to the intent of the donors. The third determines the question of election to the board of overseers, and invests this body with the same power and authority as it previously enjoyed. A proviso annexed to the third article reserves to the legislature of the Commonwealth the power to make "such alterations in the government of the university as shall be conducive to its advantage and the interest of the republic of letters," a privilege conferring the same power as that enjoyed by the general court of the province of Massachusetts Bay. It also requires of legislatures and magistrates to cherish the interests of

literature and the sciences, especial reference being made to the "university at Cambridge."

In 1780 James Bowdoin was chosen a member of the corporation. He thus enjoyed the flattering distinction of being the first individual selected for this office (except the treasurers) who was neither a clergyman, professor, nor tutor. This new departure having resulted most favorably for the interests of the college, before the beginning of the nineteenth century its friends became convinced that a right to a seat in the board of overseers should be made elective and permanent, and not incidental and casual, and besides that it was no longer just that only those clergymen should be eligible to membership who lived in the towns specified in the charter of 1642. Many of the members of the senate were already finding attendance upon the business meetings of the overseers irksome, and desired to be relieved. Hence, by reason of these various influences, the time soon came when the changes proposed by the act of 1810 could be introduced to the great advantage of the college.

HARVARD COLLEGE IN THE REVOLUTIONARY WAR.

At the beginning of the troubles between the mother country and the colonies, it was evident that both the corporation and overseers of Harvard College deeply sympathized with "the popular cause." When in May, 1769, the Massachusetts house of representatives sent a message to Governor Bernard, objecting to the stationing of British soldiers in King street, with a cannon pointed at the door of the State House, the governor, to calm the fears of the representatives, immediately ordered that the legislature change the place of its session to Cambridge. As there were no other buildings sufficiently commodious for the purpose, the legislature "apparently, by act of sovereign authority," took possession of the halls of the college, the chapel being used for the sessions. Not only was no complaint made at first because of this encroachment, but even when the new chapel was completed and its use asked for by the legislature, the corporation at once granted the request. In the early part of 1770 the legislature met for the second time at the college, apparently without objection from either of the governing boards. But when in May of the same year, Acting Governor Hutchinson, who was himself a graduate of the college, but not an advocate of the popular cause, issued writs for convening the general court "at Harvard College in Cambridge," the corporation presented a remonstrance, stating the inconvenience it occasioned the college, and objecting to the establishment of such a precedent. The undercurrent of feeling is indicated by the motion made at the time in the board of overseers, to the effect that "these repeated proroguing of the general court to Harvard College" were "an infringement on the rights of the corporation." Thereafter both the governor and council and the house of representatives made formal application for the use of the public halls of the college. To this the corporation, "on due consideration of the circumstances of the case, gave their consent."

Notwithstanding the lack of cordiality existing between the college authorities and Lieutenant-Governor Hutchinson on account of the latter's sympathy with the cause of the mother country, when he received the royal appointment as "captain-general and governor-in-chief over the provinces," both he and the speaker and members of the general court were invited, according to established usage, to dine with the overseers and corporation of the college. Occasion was also taken by the corporation to present a highly laudatory address to the governor, in which suitable mention was made of the important services he had rendered to the college, and of the gratification it gave them to have one of the sons of Harvard "advanced by the King to this high station." Shortly after this the governor paid a visit to the college and was received with great honor and a poem was sung in his praise. At the very time this exchange of amenities was taking place, Governor Hutchinson was being subjected to violent abuse and denunciation by the party to which all the members of the corporation belonged. In view, therefore, of this fact, and of his later history, as well as of the more correct estimate of his worth and scholarly attainments, which we entertain to-day, it would be gratifying, had we space, to say much more in praise of his disinterested service to the college and colony.

We have now reached a period when the history of Harvard College forms a part of the history of the American Revolution. Even the choice of a president to fill the vacancy caused by the resignation of President Locke was determined rather by the candidate's open and bold opposition to the measures of the British Government than by any acknowledged superiority in respect to learning or qualifications for the office. Especially during the early years of the war was the administration of the college beset with many difficulties. The finances were in an embarrassed condition; the rents and incomes being greatly reduced or wholly withheld, and the remaining resources precarious. As already stated, in 1772 the legislature came to the aid of the college by giving the grant of a lottery. But even this scheme when tried in 1775 proved unsuccessful and an appeal was made to the corporation to take the unsold tickets, and this they consented to do. Soon after this Cambridge became the theater of war, and immediately after the battle of Lexington the students were ordered to vacate the college buildings. Some of these were then turned into barracks for the soldiers, and even a part of the president's house was occupied by the officers. A month or two later the Provincial Congress sitting at Watertown ordered that Harvard Hall be vacated and at the same time took upon itself the work of removing the library and philosophical apparatus to Andover. In July of this year the corporation voted to omit the usual exercises of commencement, and confer the degrees by a general diploma.¹

¹Eliot says (p. 81) that "the celebration of commencement was omitted for several years." It would seem that the thoughts of men were too much engrossed by the stirring events of the time to care for metaphysical discussions or forensic displays.

It was also thought to be expedient to remove the college to some town away from the seat of war. After some consideration Concord was the location chosen, especially for this reason, that "one hundred and twenty-five students" could be boarded there. To this place accordingly such part of the library and apparatus as was thought to be indispensable to the students was removed from Andover and set up in a private house. Here the college remained for more than a year, viz, until the 21st of June, 1776. On that day the students were again assembled within the old college walls. But how changed they were! A year's occupation by the American Army had made sad havoc there; but, undismayed by the desolation that had been wrought, the corporation sends out its pathetic appeal to the general court, saying that it can not doubt that "the Continental Congress will consider it a debt of justice to make good these losses and damages which the seminary has thus sustained."

In the autumn of 1777 an event of great import to the college occurred. After Burgoyne's surrender the remnant of his army had been ordered to Cambridge to remain there until they could be transported to Europe. As the accommodations for them elsewhere were not thought to be sufficient, the governors of the college were directed to have the building vacated without delay. Accordingly, on November 29, the students were dismissed to their homes, with the injunction to report themselves at the college again on the first Wednesday of the ensuing February. As the event proved, very few of the college rooms were occupied by the British prisoners, and, therefore, although Burgoyne's army was still quartered in Cambridge, the students returned at the appointed time.

During these years patriotic feeling ran so high in the colony that the representatives of the general court thought it incumbent upon them to order an examination into the "political principles of the governors and instructors" of the college. A resolve having been passed to that effect, the "immediate government" attended, as required, a meeting of the overseers held on the 23d of April, 1776, and there presented a written declaration of their political principles. As this proved to be eminently satisfactory, no doubt thereafter existed in regard to the loyalty of the college. As might be anticipated, the warm blood of the students was fired with patriotic ardor by the events that were passing around them. As early as 1768, when the patronage of American manufactures became the test of patriotism, the students of the senior class unanimously voted "to take their degrees in the manufactures of this country." This resolution, which was carried into effect at the ensuing commencement, put a high feather in the cap of the students, and their action was lauded in the journals of the day as reflecting the highest credit upon the college. The young men of Harvard had certainly caught the spirit of the times, and there is small wonder that their declamations and forensic disputes were aglow with

patriotic fire, and that their tutors could with difficulty keep them within bounds.

Although the Revolution seemed for a time disastrous in its effect upon the college, yet, as events soon showed, it suffered no serious harm. There were a few Tories among the students who at first, to show their loyalty to the crown, insisted upon bringing their "India tea" into the commons and drinking it there as a menace to the others, but in the hearts of most of the young men during this critical era only sentiments of loyalty to country were cherished. Thus during these eventful years Harvard was enabled to send out from her halls patriots as well as scholars who were destined to render services of inestimable value to the nation.

After the evacuation of Boston on the 17th of March, 1776, congratulatory addresses poured in upon General Washington for the signal success which had attended his brilliant conduct of the campaign. Accordingly the corporation and overseers of the college, as an expression of their gratitude for the eminent services which he had rendered to the country and the college, conferred upon him, by the unanimous consent of both boards, the degree of Doctor of Laws, giving to him the enviable distinction of being the first upon whom this honor was conferred by Harvard College.

The ultimate effect of the American Revolution upon the college was beneficial in many ways, and led especially "to a great enlargement in its motives." As Professor Shaler says:

With that period the institution seems to have passed from the grade now occupied by many of our academies to the status of an institution of wider learning.

Within the next three or four decades schools of medicine, law, and divinity were organized, and the institution began to take upon itself the enlarged work of a university.

CHAPTER IV.

THE BEGINNING OF A NEW ERA.

Without attempting to divide the history of Harvard College into distinct periods, it is readily seen that external influences have at times wrought radical changes in its management. Upon the establishment of the Republic a more independent spirit necessarily began to have influence in and dominate its affairs. Still the unsettled state of the currency, the depreciation of property, and the poverty of nearly all classes of the people operated for many years to retard the material progress of the college. It was but natural that the friends of Harvard should endeavor to recover from their own financial embarrassments before they turned their thoughts to the imperative needs of any other interest, however dearly cherished. Thus it happened that the nineteenth century had already opened before any marked change was apparent that indicated the broadening and elevating of the sphere of the future college. This change, however, was soon to come. There was need of a master spirit at the helm, and such a one was found in John Thornton Kirkland. By his election to the presidency influential friends were gained, new chairs founded, and the financial condition of the college greatly improved. But there was still a lack of sound business methods in dealing with the finances, which served to put a temporary check upon its advancement and to delay for a time its development into a university. The theological status of the college, and the feeling on the part of the public that it was wholly dominated by those who were in fellowship or in sympathy with the Unitarian church, served to affect very seriously its patronage and consequent growth.

Near the close of Quincy's administration there was a feeling on the part of many of the friends of Harvard that the college was not maintaining its former prestige. In an alumni address of the year 1844 Mr. D. A. White voices this feeling. The younger New England colleges, he maintains, are each year admitting larger classes of students, while for 20 or 30 years preceding, Harvard College, notwithstanding the superior advantages offered there, has either remained stationary or actually suffered loss of patronage. He goes so far as to declare that it "is fast becoming simply a high school for a portion of our youth of Boston and its vicinity." Among the reasons for this decline he assumes that the

habits of the students are too expensive, and calls special attention to the sumptuous style of dress and furniture.

Thus it happened that for a number of decades improvements were of slow growth, and while Harvard continued to maintain its rank as the first college in the land, yet the management did little to make it a national university without sectarian bias, with doors widely open to all, and with opportunities for the most extensive research in all departments of knowledge. This work was reserved for our own generation, after the nation had entered upon an era of unexampled prosperity, when the fortunate possessors of wealth were better disposed to rear their monuments in college walls and in the advancement of science. Under the leadership of the present able executive this work is being grandly accomplished, and Harvard University now holds a place in the hearts of all intelligent Americans as one of our proudest achievements.

President Willard, after a long and successful service at the head of the college, had died in 1804. On the 11th of December, 1805, the Hon. Fisher Ames was chosen his successor. He is believed to have been the first election of a layman to fill this high office since the somewhat unfortunate choice of Dr. Leonard Hoar, in 1672. Whether his selection was due simply to his eminent abilities and high character, or whether it was in part indicative of a determination on the part of the governing boards to seek a new departure in the conduct of the college is not easy to be determined. Fisher Ames having declined to accept the office, two rival candidates appeared in the persons of Professors Pearson and Webber, both members of the college faculty and apparently well qualified to preside over the college. The choice at length fell upon the latter, who held the professorship of mathematics and natural philosophy.

NEW PROFESSORSHIPS.

In 1804 the funds bequeathed by Nicholas Boylston, esq., in 1771, had so accumulated that the corporation felt authorized in establishing the Boylston Professorship of Rhetoric and Oratory. The first to hold this chair was the Hon. John Quincy Adams, who was installed in June, 1806. By the terms of acceptance his duties were limited to a course of public lectures before the resident graduates, and before the senior and junior classes of undergraduates, and to an attendance upon the declamations of these classes. In 1810 Mr. Adams was appointed minister to the court of Russia, and therefore severed his relation to the college. By request of the students who had been under his instruction his lectures were published the same year, and give evidence of the fidelity and spirit with which he fulfilled the duties of his chair.

In 1805, the citizens of Boston and vicinity, for the purpose of establishing a professorship of natural history, raised by subscription a sum exceeding \$30,000. It would appear therefore, that the public not only desired to increase the opportunities for education, but that they put special confidence in the administration of the college, for there were then com-

paratively few men of wealth, and subscriptions of this amount were almost unknown.

William Dandridge Peck was chosen by the subscribers to the fund to fill this professorship. He was then living on his lonely and obscure farm in Kittery, where, in spite of his isolation, he had gained an enviable reputation as a profound botanist and entomologist. The funds by which the professorship had been established were placed in the hands of the college treasurer, and a constitution with numerous articles was framed to regulate the method by which these should be administered. The management of the affairs of the professorship was to be in the hands of a board of visitors. This was to be composed of the trustees of the Massachusetts Society for Promoting Agriculture, the president of Harvard College, the president of the American Academy of Arts and Sciences, and the president of the Massachusetts Medical Society.

The management of the fund bequeathed to establish a lectureship on Biblical literature by Samuel Dexter was intrusted to the president and fellows of Harvard College and five associates, to be elected by them, of whom three were to be clergymen. This board was organized in May, 1811, and in August of that year the Rev. Joseph Buckminster was chosen lecturer. In July of the following year this chair was vacated by his death, and the Rev. William Ellery Channing was chosen as his successor.

Soon after the beginning of Dr. Kirkland's presidency Levi Hedge was appointed professor of logic, ethics, and metaphysics. At the time of his appointment he held the position of "permanent tutor," which latter office has ever since been discontinued.

The establishment of the Parkman Professorship in Theology is referred to in the chapter on the history of the divinity school.

In 1820 the professorship of mineralogy and geology was established. The funds for this purpose were raised by voluntary subscription through the efforts of the friends of the college.

In 1814 a friend of the university, whose name was withheld, gave \$20,000 to found a professorship of the Greek language and literature. The Rev. Edward Everett was chosen in the following year to fill this chair, but by a vote of the corporation he was permitted to travel for 2 years (this period was afterwards extended to 3 years) and prepare himself for the duties of his office, receiving meanwhile his salary, which was fixed at \$1,200.

After the death of Samuel Eliot, esq., in 1820, it was announced that he was the founder of this professorship, and therefore the corporation voted that the foundation should be called "the Eliot Professorship of Greek Literature." Up to that time no benefactor had bestowed upon the college so large a sum during his lifetime.

Previous to this time there had been no separate Latin professorship.

but contemporaneously with the establishment of the Greek chair the corporation and overseers decided to endow the Latin chair.

The Royall Professorship of Law was established in 1815 under the will of the Hon. Isaac Royall, who bequeathed more than 2,000 acres of land in the towns of Granby and Royalton towards the endowment at Harvard College of a professorship of law or of one of physic or anatomy. In 1815 Hon. Isaac Parker was chosen as first professor on that foundation.

In May, 1817, at the suggestion of Professor Parker, who was then chief justice of Massachusetts, the law school was established at Cambridge and placed under the direction of the Hon. Asahel Stearns, who was elected university professor of law.

In 1815 the college boards received notice that an annuity of \$1,000 had been bequeathed by Benjamin Thompson, a native of Woburn, Mass., better known as Count Rumford, a title which he received from the reigning duke of Bavaria. Besides the annuity just named there was given the reversion of an annuity of \$400 bequeathed to his daughter, as also the reversion of nearly the whole of his estate after his death.

The object of the professorship was to demonstrate "the utility of the physical and mathematical sciences for the improvement of the useful arts, and for the extension of the industry, prosperity, happiness, and well-being of society." Jacob Bigelow, M. D., was chosen, in 1816, as the first Rumford professor.

In the same year as the above, Abiel Smith, esq., of Boston, left a bequest of \$20,000 for the foundation of a professorship of the French and Spanish languages.¹ This was to be used "either singly or in company with any other fund which may be given or appropriated to the same purpose." Four years later, viz, in 1819, George Ticknor was inaugurated "Smith Professor of the French and Spanish Languages and Literature and Professor of Belles Lettres." In 1825 this department was enlarged by the addition of instructors for the Italian and German languages.

In 1817 one of the founders and promoters of the Boylston Medical School established a fund of \$1,000, and directed that the income from this should be distributed in prizes for elocution, with a view to advancing the objects which his uncle had in endowing the professorship.

In 1817 the Alford fund, which was established in 1765, having accumulated sufficiently for the purpose, the Alford Professorship of Natural Religion, Moral Philosophy, and Civil Polity was founded, and Levi Frisbie appointed to this chair. Professor Frisbie was a man eminently qualified to adorn the position to which he had been chosen, and to few men is it given to make such a favorable impression upon their contemporaries. His death a few years later caused universal sorrow in the collegiate circle.

Besides the establishment of a law school, and the reorganization of

¹"The first professorship of modern languages in this country."—President ELIOT.

the Theological School the following professorships first received appointments during Dr. Kirkland's presidency:

(1) The Rumford Professorship on the application of Science to the useful Arts.

(2) The Smith Professorship of the French and Spanish Languages and Literature.

(3) The Alford Professorship of Natural Religion, Moral Philosophy, and Civil Polity.

(4) The Eliot Professorship of the Greek Language and Literature; and

(5) The Royall Professorship of Law.

Besides these, whose chairs were filled, two others were founded, the one receiving the name of the McLean Professorship of Ancient and Modern History, and the other the Perkins Professorship of Astronomy and Mathematics. The Dexter Lectureship on Biblical Criticism was also filled during this presidency, the Boylston prizes for elocution were founded, and additional instruction given to the undergraduates in such studies as chemistry, mineralogy, anatomy, physiology, and elocution. Many valuable additions were made to the library, as also to the different cabinets belonging to the college.

In 1829 the Dane Professorship of Law was founded, an account of which is given elsewhere.

In 1833 the corporation and overseers established a university professorship of mathematics and natural philosophy. Its object was to furnish instruction to the undergraduates in the various branches of pure mathematics. The method of teaching was to be either by hearing and criticising recitations, or else by reading public lectures, but only such methods were to be followed as the corporation might direct or approve. Benjamin Peirce, whose fame in after years was not limited to our own land, was elected professor on this foundation.

Some three years previous to this a professorship of the German language and literature had been established, and Charles Follen appointed professor. It would seem that the establishment of this professorship was looked upon as an experiment, for by the terms of its foundation it was limited to a period of five years.

In December, 1831, Cornelius C. Felton was chosen university professor and permanent tutor in Greek, and two years later he was advanced to the Eliot Professorship of Greek Literature. This accession of a name that was destined to shed luster upon Harvard College was followed in 1836 by that of Henry W. Longfellow, A. M., formerly professor of modern languages at Bowdoin College, who was elected Smith Professor of the French and Spanish Languages and Professor of Belles Lettres.¹

In 1839 Jared Sparks was appointed Professor of Ancient and Modern History on the foundation of funds bequeathed by John McLean, esq.

¹ It will be remembered that his successor in this chair was one who bears a scarcely less honored name—James Russell Lowell.

which had been allowed to accumulate until they sufficed for the endowment of a professorship.¹

Endowed professorships :

Hollis Professorship of Divinity, 1721.

Hollis Professorship of Mathematics and Natural Philosophy, 1727.

Alford Professorship of Natural Religion; etc., established 1765, endowed 1789, founded 1817.

Hersey Professorship of Anatomy and Surgery (now the Professorship of Anatomy), 1782.

Hersey Professorship of the Theory and Practice of Physic, established 1783.

Hancock Professorship of Hebrew and other Oriental Languages, founded 1764; Dexter Lectureship on Biblical Literature united with it in 1840.

Boylston Professorship of Rhetoric and Oratory, endowed 1771; established 1804.

Erving Professorship of Chemistry and Materia Medica, endowed 1792; Professorship of Materia Medica, 1818; Professorship of Chemistry and Mineralogy, 1827.

Dexter Lectureship of Biblical Literature, organized 1811.

Eliot Professorship of Greek Literature, 1814.

Rumford Professorship and Lectureship on the Application of the Sciences, etc., 1816.

Royall Professorship of Law, established 1815.

University Professorship of Law, established 1817. Changed to Bussey Professorship 1862.

Dane Professorship of Law, founded 1829.

Story Professorship of Law, established 1875.

Parkman Professorship of Pulpit Eloquence and Pastoral Care, established 1829; founded anew 1841; known since 1869 as Parkman Professorship of Theology.

Bussey Professorship of Theology, established 1869.

Bussey Professorship of New Testament Criticism and Interpretation, 1872.

Plummer Professorship of Christian Morals, 1855; present title given in 1886.

Smith Professorship of the French and Spanish Languages and Literatures, founded 1816.

McLean Professorship of Ancient and Modern History, endowed 1823; Professorship of Mineralogy and Geology established 1820; Professorship of Latin, 1820; Professorship of Mathematics and Natural Philosophy, 1833; Professorship of German Language and Literature, established 1825; discontinued in 1835.

Massachusetts Professorship of Natural History, founded 1805.

Fisher Professorship of Natural History, 1842.

Parkman Professorship of Anatomy and Physiology, established 1847; changed to Parkman Professorship of Anatomy 1871; Professorship of Engineering, 1847; Professorship of Surgery, 1847.

Jackson Professorship of Clinical Medicine, established 1854; name given 1858.

Perkins Professorship of Astronomy and Mathematics, founded 1842.

Phillips Professorship of Astronomy, 1858.

Bussey Professorship of Horticulture, etc., 1870; Professorship of Dentistry 1867.

Pope Professorship of Latin Language and Literature, founded 1869.

Sturgis Hooper Professorship of Geology, founded 1865; constituted a separate chair in 1874.

Winn Professorship of Ecclesiastical History, endowed 1877.

Arnold Professorship of Arboriculture, established 1879.

Shattuck Professorship of Morbid Anatomy 1854; title changed to Shattuck Professorship of Pathological Anatomy 1879.

Peabody Professorship of American Archæology and Ethnology, founded 1886.

Paine Professorship of Practical Astronomy, 1887.

Some other professorships have been established and have been merged into those now existing.

¹For history in Harvard College see "The Study of History in American Colleges and Universities," by Herbert B. Adams, PH. D., Professor of History in Johns Hopkins University. Published by the Bureau of Education in 1887.

It was not until 1872 that the governing boards at Harvard made a serious attempt to give the college the equipment of a complete university. In the year named provision was made for conferring the degrees of doctor of philosophy and doctor of science. Still, until some years later, the philosophical department continued in a formative state. By the year 1878 the university had increased its departments until they numbered eight, viz, the two undergraduate schools, which confer the degrees of bachelor of arts and bachelor of science, the theological, medical, and law schools, a graduate school of philosophy and advanced science (though this was not as yet definitely organized), and finally, two incidental schools, not then so commonly found in a university, the school of agriculture and the dental school.

CORPORATION AND OVERSEERS.

According to an act passed by the legislature in March, 1810, a great change was made in the composition of the board of overseers. Thereafter the members of the board were to be the governor, the lieutenant governor, the council, the president of the senate, the speaker of the house, and the president of the college, for the time being, with fifteen ministers chosen from the Congregational churches, and fifteen laymen. All were to be residents of the State, and their election was to take place as provided for in the act governing their selection. It was provided, however, that this act should not go into effect until approved by both college boards. By this proviso all the chartered rights of the college were respected and maintained. The act having been duly approved, the overseers proceeded to choose the number of laymen and clergymen specified therein. But the change proposed naturally aroused much opposition on the part of the six favored townships and the members of the senate, and they, in 1812, succeeded in obtaining a dominant influence in the State government, but when they attempted to effect its repeal, the overseers and corporation took the ground that the act to repeal could not be valid without their consent. Two years later the act of 1812 was set aside and the original act of 1810 confirmed, but with this clause annexed, that "the senate shall, together with the persons mentioned in the last aforementioned act, hereafter constitute the board of overseers of Harvard College." As heretofore the validity of this act was made to hinge upon its being accepted by both college boards. This having been done a new board was organized in March and April, 1814, and this law remained without material change for many years.

In the constitutional convention of 1820-21, it was proposed to add to the constitution of Massachusetts, as it relates to Harvard College, this proviso, viz: "That the board of overseers, in the election of ministers of churches to be members of said board, shall not be confined to ministers of churches of any particular denomination of Christians." Both the corporation and overseers of the college gave their assent to

this enlarged liberty of choice, but when it was submitted to the people they rejected it.

DIFFERENCES BETWEEN THE CORPORATION AND IMMEDIATE GOVERNMENT.

In 1806, upon the resignation of Professor Pearson, the corporation, for the first time in the history of the college, was composed exclusively of nonresident fellows. Afterwards as vacancies occurred they were successively filled by persons who were nonresidents, so that an apprehension began to prevail in the faculty that it was the settled policy of the corporation to exclude them from participation in their body. In April, 1824, eleven of the instructors presented a memorial to the corporation in which they endeavored to show that by the charter of the university the fellows are necessarily resident instructors. As the corporation failed to take any action, the subject of the memorial was brought before the overseers. Thereupon began one of the longest and severest contests in which the college has ever been engaged. The men who there "crossed swords" were either then or afterwards famous in State or national affairs. Professors Everett and Andrew Norton came forward as the champions of the faculty, while Chief Justice Parker and others espoused the cause of the overseers. The latter body stated their position in these words:

That it does not appear to this board that the resident instructors of Harvard University have any exclusive right to be chosen members of the corporation.

Still the corporation disclaimed any intention of trying to exclude the resident instructors; on the other hand, they expressed themselves as desirous of making such a selection as soon as the proper occasion should offer. This disclaimer on the part of the corporation was apparently regarded as a concession by the aggrieved party, and the right was not further insisted upon.

In 1823 a committee of seven persons, of which the Hon. Joseph Story was chairman, was appointed to inquire into the state of the university, and report what changes it would be expedient to recommend to the corporation for adoption. From the report made by the committee, and by another in the following year, of which latter John Lowell was chairman, there was framed, in June, 1825, a new code of laws sanctioned by both the corporation and overseers.

On account of the differences of opinion which had arisen in regard to the relation between the corporation and the immediate government, as also concerning the discipline, instruction, and morals of the college, by the provisions of the new code the "immediate government" was authorized to assume the name of the

FACULTY OF THE UNIVERSITY.

They were to retain the same powers as heretofore, and in addition they were authorized to act by committees. The president continued at the head of the faculty without any visitorial power or an inde-

pendent negative. He was exempted from certain ministerial duties, and invested with those of general superintendence, and was expected to carry into effect the measures of the faculty.¹

The university was divided for purposes of instruction into departments, each of which was to have a general superintendence of its own studies. The students were to be classified in divisions, according to proficiency, and the salaries of the president and professors were to depend in part upon the number in their classes. The university was then first opened to persons who were not candidates for a degree, but desired only to study in particular departments. Examinations were to occur more frequently, and to be made more efficient. There were to be no more fines, but the discipline was to be improved by the introduction of a new system, which was to consist of cautions, warnings, solemn admonitions, and official notice to parents and guardians. Greater offenses against good order were subject, as before, to severer punishments. These were the essential changes introduced by the new system of laws.

About this time the corporation determined that thereafter their board should hold monthly meetings in Boston. The keeping of the records, which had until now been done by the president, was delegated to one of the members, who was chosen secretary of the board, with authority to appoint a clerk and keep duplicate records, one copy of which was to be given to the president and the other preserved at the place assigned for their meeting. The treasurer, who was required to render a report every month, was prohibited from making any payment, even to the president or to any other member of the corporation, unless it had been previously sanctioned by a vote of this board. Salaries could only be paid quarterly, and no prepayment or partial payments were permitted. The names of beneficiary students and the amounts they received now first began to be entered in the accounts of the corporation.

It would appear that the overseers held a regular annual meeting in January for the transaction of their business. This was at some specified place, the hall of the Massachusetts senate being sometimes chosen.

¹ Previous to the election of Dr. Kirkland, the duties of the president's office were limited, in addition to some minor matters, to the conducting of devotional services morning and evening in the chapel; to the delivering of some religious discourse, or the expounding of a portion of Scripture "at least once a month;" to presiding at meetings of the corporation and faculty, and also acting as recording secretary of both of these bodies. In the general management of the college the president ranked in the faculty simply as *primus inter pares* without other authority than that of a double vote in case of an equal division. But in 1811 and 1812 his powers were enlarged. Thereafter he was authorized to act independently respecting the instruction and government of the students, but only on the condition that all new regulations should be laid before the corporation at their next meeting. This enlargement of the powers of the president gave rise to no dissatisfaction in the faculty, since the professors and tutors continued to be consulted by him just as they had been before.

ELECTION OF OVERSEERS.

In 1843 clergymen of all denominations became eligible as overseers; but not until 1851 did the State renounce any considerable share of its control over the college. By act of that year the governor, lieutenant-governor, president of the senate, and speaker of the house, the secretary of the board of education, and the president and treasurer of Harvard College, together with 30 other persons to be chosen by the general court, irrespective of their profession, were to form the board of overseers. *Ex-officio* membership was surrendered and the right of electorship retained. This last right was abandoned in 1865. Since then the board has consisted of the president and treasurer of the college and 30 other persons chosen by the alumni of the college of 5 years' standing. Since 1880 the office has been open to all alumni of 5 years' standing, whether living in the State or not.

The general court of the Commonwealth passed at the session of 1889 two acts for the benefit of the university, one amending the act of 1865 in regard to the election of overseers, the other enlarging the power of the president and fellows to hold taxable real estate. Neither act encountered any opposition.

The amendment of the act of 1865 removed the one practical difficulty which experience had developed in the working of that admirable act; it did away with the obligation to nominate and vote for particular persons for particular vacancies. Under the act as now amended the five persons receiving the highest number of votes are elected for the longest term, and the person receiving the next highest number of votes is elected for the next longest term, and so on.

THE PRESENT GOVERNMENT

of the university is thus briefly described in "Harvard and its Surroundings":

The legal title of the corporation is the "President and Fellows of Harvard College."¹ The corporation, consisting of the president, fellows (5 in number), and treasurer, and the board of overseers (32 in number) are the governing powers of the university, which comprehends the following departments: Harvard College, the Divinity School, the Law School, the Medical School, the Dental School, the Lawrence Scientific School, the Museum of Comparative Zoölogy, the Bussey Institution (a school of agriculture), the College Library, the Graduate Department, the School of Veterinary Medicine, and the Astronomical Observatory. The Peabody Museum of American Archaeology and Ethnology is a constituent part of the university, but its relations to it are affected by peculiar provisions.

Under the new act to enlarge the power of the president and fellows to hold real estate the university may take, hold, or may sell, any real estate, within or without the Commonwealth, which has been given to it for educational purposes; and may invest in, or sell, productive real estate within the Commonwealth to any amount, provided that nothing in the act shall be construed to give the university "any claim

"Harvard College" and "The University at Cambridge" are the only names known to the charter, to the constitution, and, it is believed, to the legislation of the Commonwealth.—From Harvard Catalogue, 1848-49.

to greater exemption from taxation than it now has under the constitution and laws of this Commonwealth."

The president is purely an administrative officer and presides over the corporation, board of overseers, and faculties of the various departments. The treasurer¹ has the custody of the property of the university. The academic council no longer exists. Candidates for degrees in arts and sciences are now recommended by the faculty of arts and sciences. The faculty of each department has the immediate charge of it. A dean is appointed for each faculty, of which he is in fact vice-president. The registrar under the general direction of the dean is the medium between the student and the college faculty, and keeps the records of that faculty and of the admission, attendance, and conduct of the students, superintends examinations, prepares all scales of scholarships, and is chairman of the parietal committee. The parietal committee, formed of the proctors² and officers of instruction who reside within the college buildings, takes cognizance of offenses by students against good order and decorum. The bursar is the treasurer's agent at Cambridge, and receives the bonds and collects the amount due from students. The curators of the museums, the director of the observatory, and the director of the botanic garden have charge of their respective departments. The secretary of the board of overseers keeps its records, etc., and the secretaries of the various departments are the assistants of the deans. The proctors are the academical police officers. The officers of instruction and government include the professors, assistant professors, tutors, instructors, and proctors. There are many other officers, but these are the most important.³

It is a tradition of the college that no teacher is commanded to do anything; his work is only suggested to him by his superior officers. The controlling boards, the faculties, the corporation, and the board of overseers never assume a mandatory relation to each other, or to the individuals who compose them.

The responsibility for the proper execution of duties is thus left to the individual officers.

It would certainly be difficult to contrive a better form of college government than that which now exists at Harvard. A few years ago it was found that the composition of the boards was as follows: In the corporation there was but one clergyman, an orthodox Congregationalist, all the other members being laymen; in the board of overseers there were 5 clergymen, and of these 3 were Unitarians, 1 Episcopalian, and 1 Orthodox Congregationalist. The government of the university is to-day in the hands of men who hold broad views upon education, and other great questions of our time. Some of these bear names that are honored wherever the English language is spoken, and wherever sound learning is inculcated.

¹The treasurer may now at his pleasure procure the appointment of a suitable deputy selected by himself.

²In 1805 there was introduced into the college the class of officers called proctors. It was their duty to reside within the college walls and preserve order. Their duty had previously been performed by the "parietal tutor," an officer appointed to succeed the permanent tutor in the case of the latter's marriage. Whenever very grave offenses were committed by the students the proctors reported the offenders, not to the tutors, but to the college faculty.

³The following regulation with reference to a "patron" was regularly published in the annual catalogue up to the year 1869-70: "Some gentleman of Cambridge, not of the faculty, shall be appointed by the corporation to be patron of all students not of this Commonwealth, who belong to places more than 100 miles distant from Cambridge, and whose parents or guardians desire to avail themselves of the regulations herein provided, and shall have charge of all the funds of such students."

[From the statutes of the university in the annual catalogue.]

(2) *President.*—It is the duty of the president of the university to call meetings of the corporation, and preside at the same; to act as the ordinary medium of communication between the corporation and the overseers, and between the corporation and the faculties; to make an annual report to the overseers on the general condition of the university; to preside on public academic days; to preside over the several faculties; to direct the official correspondence of the university; to acquaint himself with the state, interests, and wants of the whole institution; and to exercise a general superintendence over all its concerns. For the better discharge of these duties, he must live in Cambridge.

(3) *Treasurer.*—The treasurer has the custody of all the property of the university. He is required to submit his accounts, and all evidences of the property under his charge, to the committees of inspection appointed by the corporation and overseers severally, and to make annually to the overseers a statement of the receipts and expenditures of the university.

The bursar and the superintendent of buildings are under the direction of the treasurer, and are his agents in Cambridge.

All officers who are intrusted with property belonging to the university are required to keep inventories of the same, which are subject to the inspection of the treasurer, and to have all such property designated as university property by suitable marks.

(4) *Tenures of office.*—In all departments of the university, professorships are held without express limitations of time. Assistant professorships are held for 5 years, and tutorships for not more than 3 years. At the end of the term of an assistant professor or tutor, his connection with the university ceases, unless he be reappointed. Lecturers are appointed for not more than 1 year. Instructors are appointed for such terms as convenience may require. Tutors and instructors are responsible, in regard to their subjects and methods of teaching, to the professors in their respective branches of study. Proctors are appointed to assist the faculties in the conduct of examinations, and in the preservation of order within the university precincts. All officers of instruction and government are subject to removal for inadequate performance of duty, or for misconduct.

(5) *University council.*—The university council consists of the president, professors, and assistant professors of the university and such other university officials as the corporation with the consent of the overseers may appoint members of the council. It is the function of the council to consider questions which concern more than one faculty and questions of university policy.

(6) *Faculties.*—Harvard College, the Lawrence Scientific School, and the Graduate School are together under the immediate charge of a faculty, the faculty of arts and sciences. The other schools of the university are each under the immediate charge of a faculty. Each faculty is composed of all the professors, assistant professors and tutors, and of all the instructors appointed for a term longer than one year, who teach in the department or departments under the charge of that faculty. The president is a member of each faculty.

A faculty may, at its discretion, delegate any of its powers relating to ordinary matters of administration and discipline, except the power to inflict the penalties of dismission and expulsion, to administrative boards, nominated from among its members by the president, and appointed by the corporation with the consent of the overseers. Every such board shall be subject to the authority of the faculty from which it is appointed. Any administrative board established for Harvard College shall consist of not less than fifteen members.

(7) *Deans.*—Each faculty has a dean, who is appointed by the corporation, with the consent of the overseers, from among the members of the faculty. Harvard

College, the Lawrence Scientific School, and the Graduate School also have each a dean, who is appointed by the corporation, with the consent of the overseers, from among the members of the faculty of arts and sciences. Each dean is the chief executive officer of his faculty, college, or school, is responsible for the proper preparation and conduct of its business, and makes an annual report to the president.

(8) *Academic year*.—The academic year begins on the Thursday following the last Wednesday in September. The annual commencement is held on the last Wednesday in June. The vacation begins at commencement and ends on the last Wednesday in September. The Christmas recess begins on the 23d of December and ends on the 2d of January. The spring recess begins on the Wednesday before Fast Day and ends on the Tuesday after Fast Day. Thanksgiving Day, the 22d day of February, and the 30th day of May are holidays.

(9) *Degrees*.—The ordinary degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Agricultural Science, Bachelor of Divinity, Bachelor of Laws, Master of Arts, Doctor of Philosophy, Doctor of Science, Doctor of Medicine, Doctor of Dental Medicine, Doctor of Veterinary Medicine, Civil Engineer, and Mining Engineer are conferred, after recommendation by the several faculties, by vote of the corporation, with the consent of the overseers. It is required that no candidates for the ordinary degrees be recommended, except after thorough public examination, and a residence at the university of at least 1 year. There are four grades of the degree of Bachelor of Arts, two grades of the degree of Bachelor of Laws, and three grades of the degree of Bachelor of Science and of the degree of Mining Engineer.

Honorary degrees are conferred by vote of the corporation, with the consent of the overseers.

(11) *Bonds and registration*.—Every student must, on his admission to any department of the university, give a bond to the treasurer or the bursar or otherwise secure the payment of his dues to the university.

(12) *Discipline*.—The respective faculties have authority to impose fines and levy assessments for damage done to property; to inflict, at their discretion, such penalties as may be thought essential to maintain good discipline.

STATUTES AFFECTING THE SEVERAL DEPARTMENTS OF THE UNIVERSITY.

The college.

(15) *Religious services*.—Daily prayers are held in the chapel during term time.

Seats are provided, at the expense of the college, for all students who attend the Sunday services of the several religious denominations having established places of worship in the immediate vicinity of the college.

(16) *The divinity school*.—No assent to the peculiar doctrines or practices of any denomination of Christians is required of instructors or students in the divinity school.

(17) *The college library*.—The college library, in Gore Hall, is for the use of the whole university. Its privileges are also granted, under special regulations, to persons not connected with the university.

The general control and oversight of the library is committed to the council of the library, consisting of the president, the librarian, and six other persons, who are appointed by the corporation, with the consent of the overseers, for the term of three years. Any vacancy occurring in the council is filled in the same manner for the unexpired portion of the term.

It is the duty of the council to make rules for the administration of the library; to direct the purchase of books, to the extent of the funds applicable for that purpose, and to visit and inspect the theological, law, medical, and other special libraries.

The librarian and the assistant librarians are chosen in the same manner as officers of instruction and government, and are under the same liability to removal.

The librarian has the care and custody of the library. It is his duty to superintend its internal administration, enforce the rules and conduct the correspondence, and to make annually a written report on the condition of the library to the library committee of the overseers and to the corporation.

THE FINANCES.

It seems to the present generation not at all easy to understand how that three or four score years ago the educated men of Harvard could look with complacency upon those financial methods which would to-day appear not only antiquated, but puerile and harmful. Still, it is none the less true that even after the beginning of the present century the legislature of the State and the authorities of the college could think of no better way of raising funds than by having recourse to the pernicious methods of the preceding century. It therefore happened that in 1806 permission was again granted by the legislature to resort to the lottery. The amount named was \$30,000. This was to meet the balance due to the college for stock expended in erecting Stoughton Hall, to make needed repairs upon Massachusetts Hall and other college buildings, or else to erect a new building. By this means about \$29,000 was raised. In 1811 the building of a new hall was begun, and the work was completed in 1813. The cost was nearly \$24,500; and the building, in honor of Sir Matthew Holworthy, the most munificent benefactor of the seventeenth century, received the name of Holworthy Hall.

In 1810 \$5,000 were bequeathed to Harvard College by the Hon. Samuel Dexter, of Mendon. The object of this bequest was to promote "a critical knowledge of the Holy Scriptures." The motive of the donor, as explained in the statement of another, is that he disapproved "the dogmas of the famed theologists of Geneva, which he considered as unsupported by Scripture and doing violence to the moral attributes of God."

In February, 1814, the trustees of the New England Colleges having petitioned the legislature for aid, an act was passed "for the encouragement of literature, piety, morality, and the useful arts and sciences." In this measure it was provided that a bank tax should be divided between the colleges of Harvard, Bowdoin, and Williams, in certain specified proportions, for a period of 10 years. From this source, therefore, Harvard College received \$10,000 annually, a total gift to the college of \$100,000. In disbursing this sum the legislature provided that one-fourth should be applied to the partial or total reduction of the tuition fees of such students (not exceeding half the members of any class) as should apply therefor. This was the first and only grant of money by the legislature to the college after the formation of the State government. In the entire history of the college the State has never founded a professorship or established a permanent fund for any object what-

ever. It has built, including the money raised by lotteries, six college buildings, namely, Massachusetts, Harvard, Stoughton, Hollis, Holyworthy (1812), and University Halls, the medical college in Boston, and the old president's house.

About the period already referred to Holden Chapel was newly arranged, so that the medical lectures at Cambridge could be held there, and costly wax preparations were purchased to supersede the necessity of dissecting human subjects at the lectures appointed for undergraduates.

Until the year 1812 the faculty and students of Harvard College worshipped in the first parish church of Cambridge. In that year the overseers thought that it would be for the advantage of the students if the services of the Sabbath could be held within the walls of the university. This measure was accordingly recommended to the consideration of the governing boards, and, being heartily seconded by them, a chapel was completed in 1814 in University Hall, and a distinct church organized, public worship being conducted by the faculty of the theological school.

University Hall, at the time of its completion in 1815, was by far the most expensive structure that had been built upon the college campus. The total cost was \$65,000, and the funds to meet this expenditure were derived in part from the proceeds of the bank tax voted by the State legislature, and in part from private donations.

In addition to the \$20,000 given by Samuel Eliot for the founding of a professorship of the Greek language and literature, the sons of this donor, William H. and Samuel Atkins Eliot, became generous benefactors of the college, and made, besides other gifts, valuable contributions of books to the library.

In 1814 an act was passed by the legislature permitting the corporation of the college to hold land, tenements, etc., within the State to the clear yearly value of \$12,000 over and above the amount which it was previously allowed to hold. The buildings occupied by the students were not included in this estimate.

Previous to the presidency of Dr. Kirkland the management of the pecuniary concerns of the college had been wholly in the hands of the corporation, but, as already stated, greater authority was conferred upon President Kirkland, and he, with the assistance of two or three others in the corporation, attempted to remove the former limitations to its expansion and establish its foundations upon a broad and more secure basis, and thus prepare the way for it to assume the character as well as the name of a university. But to accomplish these objects new dangers had to be encountered. In multiplying professorships, in making tutors professors after 6 years of satisfactory service, in increasing the salaries of professors and tutors, in assisting meritorious students, and in introducing other reforms, the expenditures were greatly increased. It frequently happened that a professor was appointed to a chair when the funds destined for it were quite inadequate to his support. In that

event the amount of the deficit had to be taken from the tuition fees. It was President Kirkland's custom to distribute with constant generosity from his own income and also to secure assistance from his wealthy friends for indigent but promising students. He never hesitated, indeed, to make use of all the funds in the college which could be placed at his disposal for this purpose.

Up to this time the medical professors had been supported either by fees or by the income from the funds appropriated to their professorships. It was now proposed to increase their salaries, and to do this the corporation had recourse to raising the price of tuition, but voted to render assistance in special cases.

During the 10 years from 1814 to 1824, \$25,000 was appropriated from the bank tax to assist indigent students; of the remaining \$75,000 there was pledged, as already stated, for the building to be constructed for the medical college the sum of over \$20,000. The balance (only \$50,000 was ever received) was appropriated to the fund for the erection of University Hall. While the distribution of the bank tax continued the number of students in the university rapidly increased, so that at times there were more than three hundred enrolled. The spirit of liberality manifested by the president became contagious, and affected not only the corporation, but all departments of the college. Unfortunately, however, it was soon discovered that the expenditures were in excess of the income. University Hall alone had cost \$14,000 more than the amount received for its construction. It was plainly evident that retrenchment was necessary unless larger endowments could be secured.

Between 1814 and 1824 the corporation had expended—

For the Medical College building	\$21, 000
For University Hall	64, 000
For repairing buildings and improving grounds	25, 000
On the library and the philosophical and chemical apparatus	8, 000
As beneficiary aid to students	24, 000
Total	142, 000

Meanwhile the grounds had been greatly beautified, and for this service the college was specially indebted to the steward, Stephen Higginson, jr., and to John Lowell, who caused to be set out the trees and shrubs, which have since thrown their increasing shadows over the grounds, and now so gracefully adorn the fine college campus.

In the financial embarrassments which then overtook Harvard College, it was most natural that the governing boards should turn to the legislature for aid. For nearly two hundred years she had been its fostering mother, and it was hoped that she would ever continue to extend the helping hand and take an affectionate interest in its welfare. But in this expectation the friends of Harvard were disappointed. The legislature closed its hand, saying in effect that the college had reached mature years, and should learn to provide for its own necessities. No other course was therefore open but to retrench. Still so loth were the

authorities to do this that the vote reducing the emoluments of the president and the professors was not to take effect until some two years later, September 30, 1828.

The loss of the beneficiary aid received from the bank tax and the financial embarrassments of the college reduced the number of students from three hundred and over in 1822, to two hundred or less in 1826. During 1825 the expenditures exceeded the income by more than \$4,000. The reason of this deficiency was to be found partly in the fact that the unappropriated funds, some of which had been spent in improving the buildings and grounds, had been greatly reduced since 1810.

But however great the embarrassment of the college was, the closest scrutiny could reveal neither fraud, embezzlement, nor selfish appropriations of the college funds. All the expenditures had evidently been incurred with an honest intent to advance the interests and promote the progress of the institution.

Near the close of 1826 a committee of the most highly honored friends of the university was appointed to devise plans for the reduction of the expenses. The members of this committee took the ground that high tuition fees diminished the number of students, and recommended that the price of tuition per annum be fixed at \$39 instead of \$55. They recommended also a uniform system of retrenchment in all departments of the college, by which it was estimated that an annual saving of \$8,000 would be effected. This recommendation was adopted and went into effect in April, 1827. Thus the foundation was laid for a prosperous state of the finances. This committee took occasion to express their conviction that the college was constantly improving in its means of instruction, as also in its morale and discipline.

Upon the reorganization of the Society for the Promotion of Theological Education in Harvard University (which was incorporated in 1826), the sum of \$19,327.23 was raised towards the erection of Divinity Hall.

The cost of—

Divinity Hall was	\$31,477.67
The matron's house	2,848.90
Furniture for Divinity Hall and matron's house	2,562.08

All the gifts from the public treasury to Harvard College during the period from 1780 to 1846 amounted to about \$170,000. The permission given in 1794 and 1806 by the legislature to raise money by lotteries was not a gift from the State. The State gave nothing but a license. At the same time there was donated by individuals, either in money or in articles the value of which could be estimated, the sum of \$577,817.30, besides gifts of various sorts which can not be stated in dollars and cents.

In 1848, according to the treasurer's report, the property of the college amounted to \$800,000, of which \$472,000 was nominally, but only \$390,000 really, productive. The funds appropriated to the law school amounted then to \$41,855.76, a large portion of which had accumulated

from its own resources. The average income, exclusive of some \$16,000 which was specifically appropriated to certain purposes, was \$23,633.11, and the annual expenses were over \$40,000. Nearly one-half of the money for the necessary expenses of the college had therefore to be drawn from the students. Of the productive funds less than one-half was left to the unrestricted use of the college, the rest, as the record states, being "appropriated for specific purposes." The statement can hardly be called in question, that nearly the entire productive property at that time was the result either of private munificence or of the wise management of the corporation.

By legislative acts in 1828 and 1836 the college, without compensation or indemnity, was deprived of the rents from the Charlestown ferry, which then amounted to an annuity of \$666.66. The beginning of this benefaction dated from the opening of the college in 1640.

The first building erected during Quincy's presidency was the one known as the Old Law School. It was a two-story brick building, the gift of Hon. Nathan Dane, completed in 1832 and enlarged in 1845. It formerly served as a lecture room and held the law library with its paintings and busts of men distinguished for legal ability.

At the time Quincy published his History of Harvard University the benefactions of Christopher Gore had exceeded in amount those of any other patron of the college. This generous friend was a jurist of such eminence that his name is worthy to rank with those of Theophilus Parsons and Fisher Ames. Among the public offices he held were those of governor of the State and United States Senator. There was no restriction placed upon his bequest, except that it should be for "the promotion of virtue, science, and literature in said university." The sum realized from it by the college amounted to about \$100,000.

A fireproof building for the library seemed to the corporation to be the most imperative need of the university, and it was therefore determined that a part of the bequest should be devoted to this purpose. It was thought that such a building, beautiful in architecture and material, and sufficiently capacious to hold the books that would probably accumulate during the present century, would be a fitting monument to the character and liberal spirit of so eminent a friend and benefactor of the college.

This edifice was begun in 1837, and by 1840 completed to the pinnacles and finished inside. The building presents a very pure specimen of the Gothic style of the fourteenth century in its form and proportions. The stones used in its construction are of the very hard sienite or Quincy granite, so that elaborate ornaments had to be omitted. The design was from Kings College Chapel, Cambridge, England. This was the first building on the college grounds which laid any claim to architectural excellence. It bears the name of Gore Hall.

Another illustrious name among the benefactors of Harvard College was that of the navigator, scientist, and mathematician, Nathaniel Bow-

ditch. Without having enjoyed any of the advantages of a college training, his name before his death became identified with the loftiest branches of science, and linked, at least in the thoughts of his contemporaries, with those of Newton and La Place. If we except the treasurers of the college, he was the first, since the earliest years of its history, to be chosen a member of the corporation, without being an alumnus of the institution.¹

In 1848 a bequest of \$50,000 was made for the purpose of educating young men who give evidence of rare powers in any department of mental activity, and this support is to be granted even before the recipient reaches the usual age for entering college.

In the same year as the above bequest the building for the Lawrence Scientific School was erected, at a cost of \$25,000, being the donation of Abbott Lawrence, of Boston. It is a three-story and basement brick building with a two-story L, and forms the east wing of the projected building. Of most of the buildings since erected we cannot attempt to give any detailed description. Boylston Hall, the chemical laboratory, was erected in 1857, and to this a mansard roof was added in 1871, the total cost being about \$70,000. The hall is built of Rockport granite, and is the gift of Ward Nicholas Boylston, of Boston. According to the bequest, the building was to be used "for an anatomical museum and library room, together with a lecture room and chemical laboratory."

Gray's Hall was built by the corporation, in 1863, as an investment of college funds. It bears the name of three benefactors of the college.

Matthews Hall was erected in 1872, in the Gothic style of architecture, at a cost of nearly \$120,000, and is the gift of Nathan Matthews, of Boston. It is divided into suites of rooms and is one of the most ornamental of the college dormitories.

Another attractive dormitory, built in the same year, is Weld Hall. Though of brick, it has belts of light sandstone and is in the Elizabethan style of architecture, and five stories high. It was the gift of William F. Weld, in memory of his brother.

Thayer Hall was built in 1870, and cost about \$100,000. It was the gift of Nathaniel Thayer, of Boston, in memory of his father, Rev. Nathaniel Thayer, D. D., and his brother, John Eliot Thayer.

Appleton Chapel was built in 1858, but has since been greatly improved. Its total cost has been about \$68,000. It was named in honor of Samuel Appleton, who died July 11, 1853, and bequeathed \$200,000 for scientific, literary, and charitable purposes. Of this amount his executors, in November, 1854, gave \$50,000 to Harvard College for the erection of a chapel.

Other buildings belonging to the university, some of which are among the finest in the land, are Sever Hall, named in honor of Mrs. J. W. Sever; Austin Hall, the New Law School Building, erected in 1883,

¹ See also Quincy's History, pp. 550, 558, 604, 611, *et seq.*, vol. 2; and Appendix, pp. 585.

on the site where Thayer Commons Hall formerly stood; the Jefferson Physical Laboratory, completed at a cost of over \$100,000, named for Thomas Jefferson Coolidge, grandson of Thomas Jefferson; the Hemenway Gymnasium, built in 1878 at a cost of \$100,000, the gift of Augustus Hemenway, of Boston, of the class of 1875; Divinity Hall, Memorial Hall, Peabody Museum of American Archæology and Ethnology, Agassiz Museum of Comparative Zoölogy, Bussey Horticultural and Agricultural Building, and others which have been either described or referred to in these pages—forming altogether the most impressive and expensive grouping of college buildings in America, if not in the world.

The material growth of the college since the close of the civil war has been unparalleled in the history of American colleges. In 1878 the number of buildings on the college grounds had increased to 14. Of these, 1 was the library, 4 were used for recitations, and 7 as dormitories, and besides these were Appleton and Holden Chapels. To-day the number of buildings exceeds 25, and scarcely a year passes without witnessing some addition to this number. Of all these, Massachusetts and Harvard and Hollis Halls were built with the money of the State; two, Stoughton and Holworthy, were built with the proceeds of lotteries, granted by the general court in 1772, 1794, and 1806; and the rest have been erected with the resources of the college or from the benefactions of its friends.

Of the three ancient buildings, Massachusetts Hall, built in 1720, is the only one now standing; Stoughton Hall, in the rear, having been removed, and Harvard Hall having been replaced by a second of the same name, built in 1764-65. Massachusetts externally preserves the same appearance that it did 150 years since, except that the clock has been removed, and only the wooden shield on which the dial was placed remains, but in 1870 the whole interior was remodeled. Harvard Hall was most distinctly the center of college life. Here was the dining hall where the students dined in common, the kitchen and buttery to which they went morning and evening for their bowl of chocolate or milk and piece of bread, to be eaten in the yard or in one's room. Here was the chapel where morning and evening prayers were held, with a fine of twopence for absence and a penny for tardiness; the library, the mineralogical cabinet, the philosophical apparatus and lecture room; and here, too, in this warm, hospitable-looking building, was the usual commencement dinner.

The oldest of the buildings, Massachusetts and Harvard, retain, as I have said, "a dignity and character not to be found in most of the later buildings. They repeat the spirit of an age which had great self-respect and a certain colonial splendor, which was heightened by the social contrasts which college manners and customs retained long after they had been roughly disordered in the outer world."

Of all the buildings which adorn the college grounds and awaken an affectionate interest in the hearts of Harvard men none holds a more cherished place than Memorial Hall. As one enters by either doorway, he finds himself within this stately hall, which rises under the lofty tower that crowns the building.

Above, in monochrome, are Latin inscriptions, reciting in a dead language the ever living, immortal truths of patriotism, valor, faithfulness, piety, and sacrifice. On the right are lofty staircases, under the lesser towers, leading to the theater; on the left, one passes by a broad doorway into the great dining hall.

It is this building which holds the choicest hope and the bravest memory of the university. For, after all, what is the university, what the whole garner of scholastic wealth, if it be not, first, last, and always *ἀγαθή κουλτρον*, nurse of stalwart youth? This, Memorial Hall keeps ever in remembrance. The lofty vestibule by silent iteration bids one lay deep the foundation of scholarship upon national well-being, connecting as things inseparable the heroic sacrifice and the heroic devotion to learning. The great dining hall is at once the meeting place of hundreds of young men, bound together by all that makes youth glad, and consequently before one are the faces of that long line of men, and of women, too, who have joined the college by a thousand ties to the New England of history. The stern ancestry of early New England days, the opulent orderly men and women whom Copley and Stewart painted when the colonies were consciously and unconsciously husbanding their strength for the approaching autonomy; the familiar faces of presidents and professors, whose devotion to learning remains, as a precious legacy; the younger, nearer face of the hero of young Harvard, brave, generous, dying with halo of obloquy; all these forms and spiritual presences fill the air of the great hall with something more than an academic glory. The procession of men that tells of the 250 years of college life is ever before the eyes of the restless, hopeful, eager youth of the day; and the hall, with its silent witness, is a constant voice calling for noble life and worthy aims. The crowd that gathers there daily, passing in and out, dancing gaily class-day evening, and listening to the wit and eloquence of commencement dinner, this is the college, and here is the center of the university to-day, binding the past and the future, making great things possible because it holds and records great things achieved.¹

A GENERAL VIEW OF THE COLLEGE.

If we draw two pictures, one of the college in 1642, and the other as it presents itself to us to-day, we can but be amazed at the expansion and progress that has been made. At the former date there was but one small building and less than 3 acres of land. To-day the college quadrangle at Harvard square contains about 23 acres. Ranged in order or scattered over this area are 5 ample dwelling houses, 2 chapels, 7 dormitories, 5 large buildings full of lecture rooms or laboratories, besides the old Dane Law School building, and the granite library building, known as Gore Hall. These are about half of the college buildings. Across the road to the south and west are other dormitories. Beyond the roads to the north are Memorial Hall and the gymnasium, the new law school, the Divinity Hall with its new library, the scientific school, and the museums. A mile to the west are the

¹ Horace E. Scudder, in *Scribner's Monthly* for July, 1876.

observatory and the botanic gardens, while the medical school and the dental school are 3 miles away in Boston, and the farm school with the school of veterinary medicine is 3 or 4 miles farther off at Jamaica Plain. The fact that the college "works with so many hands and covers so much ground explains why it is that she ever has empty coffers that need to be filled by her loyal and generous sons."

The pressure upon her resources is very great. Each department, each scientific school, the gymnasium, the library, get but part of what they really need. "The college life is so vigorous that it could spend a million dollars a year."

The business carried on in the several departments in 1886 was as follows:

Department.	Received.	Paid out.
Dental School	\$6, 105	\$7, 415
Veterinary School	17, 189	17, 556
Medical School	66, 379	65, 377
Observatory	18, 355	15, 168
Library	22, 876	37, 684
Scientific School	42, 862	31, 089
Law School	35, 408	32, 151
Divinity School	61, 449	28, 047
The College of Liberal Arts	295, 214	265, 982
The University	40, 912	43, 637
Total	606, 749	544, 086

Surplus in 1886, \$62,663.

The treasurer gets more than 5 per cent. upon her large investment. Her productive property was quoted in 1886 at \$5,190,772.35. About a million dollars was added in 1887 by bringing in two large bequests. Under the wills of Professor Gurney and his widow, the college received \$170,000 to be applied to the support of "higher instruction in history, political science, and literature." This wise and generous gift goes part way toward enabling the college to pay its professors more adequate salaries than it had heretofore been able to afford. Harvard's sons "dying or preparing to die are apt to remember their alma mater."

Doubtless the administration of President Eliot, when it is concluded, will stand as a monument to commemorate this American genius for college building.

Stated in brief, the financial record of the college and university has been as follows:

Up to September 1, 1810, the grants from the colonies or State amounted to	\$116, 000. 00
Other gifts, bequests, transfers from associations, etc.	179, 000. 00
Property then on hand, as valued in the college books	361, 433. 16
Sept. 1, 1828, amount received from State	216, 000. 00
Sept. 1, 1828, other gifts, etc	360, 000. 00
Sept. 1, 1828, property on hand valued at	381, 682. 57
Sept. 1, 1876, amount received from the State	316, 000. 00
Sept. 1, 1876, other gifts, etc	3, 200, 000. 00

Sept. 1, 1876, property on hand valued at.....	\$3, 406, 653. 43
Sept. 1, 1889, invested funds (c.).....	7, 000, 000. 00
Sept. 1, 1889, grounds, buildings, collections, etc. (c.).....	4, 000, 000. 00

In 1888 the treasurer's statement showed that the total amount of receipts figured up \$985,953.87; total amount of receipts, exclusive of income, reached the figures of \$527,890.40; total amount of expenses, \$725,716.40.

A large portion of the property of the college, including the college yard, nearly all of the college buildings in Cambridge, and the scientific and art collections, does not appear upon the college books.

At the alumni dinner in June, 1889, President Eliot gave this favorable report of the condition of the university: "—"

The past year 1888-89 is full of prosperous events, for which we must be grateful to many benefactors. First, our thanks are due to the Commonwealth of Massachusetts, which has removed all restrictions upon our investments in real estate. This act has shown unusual confidence in our institution, while it has greatly improved Harvard's financial outlook. Next, as to the gifts of the year. This community is extraordinarily benevolent toward all educational institutions, and especially the highest. In spite of a bad year Harvard has received upward of \$300,000. Two of the most important gifts came from the West. The son of a father who had received aid from the beneficiary fund has recently repaid it in full, and the funds from a scholarship were also returned by another man who had prospered since his college career. We have also received many gifts toward new buildings. Another gift of interest was from a lady in New York, a stranger, who gave \$50,000 toward the construction of a 24-inch photographic telescope. Beside the gift of money are other important ones, such as the portrait of Charles Francis Adams and the memorial window of the class of '61. These recall the great deeds of those of our alumni who served the country well in a time of the greatest peril. An alumnus has recently offered a gift of peculiar acceptability of \$200,000 toward the retiring allowance fund, than which no other purpose could be happier. We have entered into pleasant relations during the year with the University of Japan. About a year ago I was requested to name a Harvard Law School graduate to teach there, and now I am asked to appoint three more professors for another Japanese college; but not to detain you longer, I merely add that the faculties of the university have been only too cognizant of the recent changes in our custom and rules.

THE LIBRARY.

The libraries of the university, constituting so important a part of its treasures, are not all gathered into one building. The Museum of Comparative Zoölogy has its own library, so have the Divinity School, the Law School, the Medical College, the Lawrence Scientific School, the Observatory, the Botanic Garden, the Bussey Institution, and so, also, have the various students' societies and clubs, but the general library of the college is contained in Gore Hall within the college yard. As already stated, the first collection of books was almost completely destroyed by fire in 1764, when the number of volumes in the library was estimated at 5,000. A new collection was begun and housed in the new Harvard Hall. By 1790 the loss had not only been repaired, but collections to the number of 12,000 volumes had been made. In 1840 there



HARVARD COLLEGE—GORE HALL, THE COLLEGE LIBRARY.



HARVARD COLLEGE—BOYLSTON HALL, THE CHEMICAL LABORATORY.

were in all college departments, including the libraries of the societies, upwards of 50,000 volumes.¹

In 1841 the library was removed to the building which it now occupies, and which was erected with the money left by Christopher Gore. "The alcoves of books retreating beyond the eye, surmounted by names of donors to the library; the busts of eminent men connected with the college; the great cabinet, containing the card catalogue; the cases of rare books and manuscripts and literary curiosities; the silent tread of librarians and assistants, and the groined vaulted ceiling covering the whole and resting upon white pillars," form a picture peculiarly impressive.

In 1877 an extension of the east transept was completed at a cost of \$90,000. This new compartment, designed expressly as a repository for books, differs materially in construction from the original hall, and, with the exception of the shelves, is entirely of stone, brick, and iron. The roof consists of concrete tiles, 2 feet square and 3 inches thick, placed upon iron rafters, and covered with slate.

The new building is considered fireproof, and heavy brick walls with iron-covered doors separate the new and old halls. The interior is divided into six floors, which, together with the staircases, are made of perforated cast-iron. Each floor is subdivided into fourteen sections with adjustable shelves, the topmost of which can be reached from the floor. On the south side of the second floor is the librarian's office, and adjoining are several rooms used by the assistants. Two book elevators are at diagonally opposite corners. In a part of the delivery room is a gallery in which periodicals are kept; over this is a hall devoted to books relating to art, and which also contains a collection of rare and curious manuscripts and autographs in glass cases. The old hall is to be remodelled, and when all the changes are effected the building will have a capacity of over 500,000 volumes. The privilege of consulting the books of the library is granted to every one, whether connected with the college or not. This feature has made the library the resort of students from various parts of the country, and the receptacle of many valuable collections of books and antiquities.

But books can only be taken away by students of the university who have given bonds and by graduates of Harvard who have paid an annual fee of \$5. Though called the College Library, it is in effect the library of the university. The president, in a recent report, points out what an important position the library is expected in the future to take in that group of organizations which now constitute the university.

Persons entitled to use the college library can have access to the departmental libraries for consultation by applying to the superintendent of circulation at Gore Hall; but such libraries are primarily for the

¹The library was divided, as follows:

	Volumes.
The theological and biblical, containing.....	700
The medical, containing	1, 000
The law, containing	6, 100
The public, containing.....	39, 161
The society libraries, containing.....	4, 500

There were besides many rare and costly printed books and a number of valuable ancient MSS.

Included in the library was the German Professor Ebeling's valuable collection of works treating of American history.

special use of the schools and departments and are placed in the buildings belonging to such schools and departments.

There is a bulletin published three times a year containing lists of accessions, abstracts of the proceedings of the corporation and overseers, and bibliographical articles. In 1841 the annual income of the library was about \$250; now it is over \$25,000. Including all departments of the university except the museums, \$50,000 a year is spent for books and expenses.

Under the charge of its present eminent librarian, Mr. Justin Winsor, the library has become the center of the intellectual life of the university.

The number of persons making use of the library steadily increases from year to year. Fourteen years ago 57 per cent. of the students made use of it, in 1887-88 the proportion for the whole college had increased to 89 per cent. The total number of volumes taken out in 1888-89 was 68,892.

The several libraries contain about the following number of bound volumes:

Gore Hall.....	259,500
Lawrence Scientific School.....	2,700
Bussey Institution (Jamaica Plain).....	3,000
Phillips Library (observatory).....	4,100
Botanic Garden (Herbarium library).....	5,300
Law School.....	23,600
Divinity School.....	20,800
Medical School (Boston).....	1,550
Museum of Comparative Zoölogy.....	17,900
Peabody Museum.....	1,000
	<hr/> 339,450

In 1889 12,000 volumes were added to the library, making its grand total over 355,000 bound volumes.² The total annual increase of books in the whole university has been on the average of the last five years 13,000 bound volumes a year. There are also libraries connected with the several laboratories and with some of the class rooms containing working collections, which are in some instances open in the evening.

The collection of pamphlets and maps in the college library is very large, and is estimated to be equal in number to the collection of bound volumes. The departmental libraries have also considerable numbers

¹ This does not include the Whitney collection of geology and geography, not yet enumerated.

² President Eliot says that this rapid accumulation of books will soon make the proper handling of the library impossible. He points out the waste of time caused by the inability of the authorities to light the library artificially by any safe method. On these two accounts he requests the friends of the departments of "philology, literature, philosophy, political science, history, music, and mathematics" to raise \$150,000 to build a new reading room, and to convert old Gore Hall into a fireproof stack. He justly and aptly calls the library the "laboratory and workshop of the departments called upon for this effort of love."

of pamphlet monographs on subjects connected with their specialties, and these are not included in the count of volumes. The college library has also a collection of coins. There are but two larger collections of books in America—the Boston Public Library and the Library of Congress. Among the most generous contributors to the funds of the library have been William Gray, Charles Minot, Mrs. James W. Sever, Charles Sumner, and President Walker.

MINERALOGICAL CABINET.

Previous to 1793 the university possessed no mineralogical cabinet. There were a few specimens in a room in Harvard Hall, called the "Museum," but they were of little value and not scientifically arranged. But in March, 1793, John Coakley Lettson, M. D., F. R. S., an eminent London physician, transmitted to the college "a very valuable and extensive collection of minerals," to which he afterwards made additions until the whole amounted to more than 700 specimens. In 1796 the same donor sent a collection from the Spanish mines, accompanied by valuable additions to the museum. His gifts may well be considered the foundation of the present extensive mineralogical collection in the university. The cabinet was further enriched by a collection of curious and valuable specimens of European marble presented by the Hon. James Bowdoin. To Benjamin Waterhouse, M. D., professor of the theory and practice of physic, must be given the credit of first scientifically arranging the collection of minerals and of preparing the catalogue of them.

In 1795 the French consul in Boston, under instructions from a committee of the National Convention of France, presented a collection of valuable minerals, consisting of about 200 specimens. No other very important additions were made to the cabinet until 1820, when Andrew Ritchie, esq., purchased a valuable collection which had been brought from Dresden, in Saxony, and presented it to the university. In 1824 several thousand specimens were added by the liberality of several gentlemen in Boston. Later (1837) the legislature of Massachusetts gave about 1,500 geological specimens, which were sufficiently complete to illustrate the geology of the State. From these various sources there had been collected up to the year 1840 over 26,000 specimens, which were scientifically arranged and displayed in cases. This cabinet is now in Boylston Hall, but it is to be moved shortly to the university museum.

Through the efforts and influence of Prof. Josiah P. Cooke, probably better known to the great body of graduates than any other professor, Harvard's mineralogical collection has grown to be one of the best and most complete of any museum in the world. This and the one at Yale are the best in America, and the only collections in Europe which surpass them are those in the British Museum, the museums at Vienna and at Paris. This collection is also to form a part of the university museum.

PHILOSOPHICAL APPARATUS, ETC.

As early as 1840 the college had a well-nigh complete philosophical apparatus, being only deficient in the means of illustrating the numerous phenomena known by the name of the polarization of light.

In 1820 great interest was taken in the "Panorama of Athens," which was painted by Barker and Burford, and presented to the university by Theodore Lyman, esq. It was subsequently burned.

CHAPTER V.

THE EXPANSION OF THE COLLEGE.

By 1848 Harvard had expanded into five distinct departments, each of which had its separate instructors, funds, pupils, and objects. These were divided into the college and the schools of theology, law, medicine, and science, and were under the control of the president and fellows of Harvard College, though subject to the visitorial power of the board of overseers. Not only were the funds for the support of the various schools in the hands of the corporation, but that board had also the power to appoint all officers of every description who were connected with the university, subject to the approval of the overseers. It had also to prescribe the general rules by which each department was to be governed, and to see that they were carried into effect.

At this time the faculty of the college was composed of 7 professors and 4 tutors, besides 4 special teachers in the modern languages. These taught the learned languages, mathematics, natural philosophy, metaphysics, moral philosophy, rhetoric, and elocution, the evidences of religion, both natural and revealed, political economy, and the modern languages. The method of teaching was by recitation and lectures, and exercises were required in composition and declamation. The subjects treated by lectures were chemistry, history, anatomy, mineralogy, botany, astronomy, the application of science to the useful arts, and the means of preserving health. In addition to attending the lectures the students were allowed to devote only so much time to these subjects as could be spared from their regular studies.

At this time there were no optional studies during the first 2 years, but the student was able to obtain a pretty thorough knowledge of Greek, Latin, and mathematics, and make some advancement in the studies of history, rhetoric, metaphysics, chemistry, and the modern languages. During the last 2 years of the course the pursuit of the higher branches of mathematics, and the attainment of critical skill in the ancient languages, together with a further study of the modern languages, were made elective, while the other studies named were continued in order to complete what was thought to be a necessary foundation for high scholarly attainments. It was believed that by including a variety of studies in the required course each would be able to discover his own particular tastes and in what direction his strength lay, and would therefore be better qualified to select that vocation for which

Providence had fitted him. Still, it must be confessed that the plan of the studies was the expression not so much of a deliberate design on the part of the governing boards as the result of circumstances and of a desire on the part of numerous benefactors to provide instruction in their favorite subjects.

In order to incite the students to good conduct and to diligence in their work a system was introduced of awarding parts at the exhibitions, which were given each year, as also at the annual commencement. The rank, which had reference not alone to scholarship, but also to general character and deportment, was determined by a system of marking kept by each college officer. Good conduct was also encouraged by means of an appropriation from the Edward Hopkins fund, and in other ways presents of standard books were made to meritorious young men in the sophomore class. Out of the income from the Bowdoin fund prizes were given for dissertations in English prose and Latin verse, and from the fund left by Ward N. Boylston, esq., prizes were distributed for the best exhibitions of oratory.

The various societies which existed in the different classes formed another incentive to study. The desire to gain admittance to them was universal, yet this could only be had by those who maintained good rank as scholars.

At the two hundredth anniversary of the college, in 1836, the number of students enrolled was 233. At the beginning of the collegiate year, 1840-41, the number had increased to 448. The whole number of the alumni was then 5,607. The increase by decades in the several departments since 1836 is shown by the following table :

Year.	College.	Divinity school.	Law school.	Medical school.	Scientific school.	Other students.	Whole university.
1846-47	272	31	132	159	.....	17	611
1856-57	382	22	109	122	57	3	695
1866-67	419	15	157	301	60	7	959
1876-77	821	23	187	226	20	64	1,370
1886-87	1,076	20	170	250	17	124	1,657
1888-89	1,180	26	217	275	35	166	1,896
1889-90							12,079

Forty years ago the average age of the students when entering college was 16 years, now it is between 18 and 19 years.

The preceding table shows that the number of students in the whole university has more than trebled in that time. It is estimated that about one-half the students come from eastern Massachusetts and the frequent home-going, especially for Sundays, brings it about that the full quota of students is never on hand, nor are they ever gathered together *en masse*. In fact, there is no auditorium large enough to hold them all, and one great reason for making chapel service optional instead of compulsory was that Appleton Chapel was taxed beyond its capacity.

¹ These came from 40 States and Territories of the Union, and a few from foreign
 * 1,271 were in the undergraduate department.

It is interesting to observe the increase in the number of teachers within the same period :

	1846-47.	1876-77.	1886-87.
Professors	19	51	62
Assistant professors		21	23
Lecturers		3	5
Tutors	4	7	3
Instructors	2	30	59
Assistants		12	34
Whole number of teachers	25	124	186
Librarians, proctors, and other officers	10	24	35

The whole number of teachers in 1889-90 was 217.

In every period of the history of the college much praise has been due to the tutors for the talent and fidelity with which they have discharged their duties. This has helped, in no small measure, to insure the success and prosperity of the institution. In after-life many of these men have attained to high professional eminence or high civil ranks in the Government.¹ In her various faculties of instruction Harvard has had, during nearly a century past, men of the widest renown, who, in their special branches of science, have been recognized "as the advance guard of learning." She has also had a number of men of eminence among her librarians.

To the student of its history, and especially of the history relating to its later years, no fact is more striking than the ease with which, from its organization, the college has been able to adapt itself to the varying and growing wants of the public. Already, in 1810, it had shaken off the obsolete system of college government, under which Yale persisted until 1872; and the custom which had been sanctioned for over 200 years, that certain clergymen and others should necessarily compose a part of the board of overseers without reference to their fitness to perform its duties, was revoked in 1851.

Since 1865 the graduates have chosen the entire board of overseers, and it is under their management that the university has displayed such progress as is hardly paralleled in the whole history of modern education. An instance of this foresight is to be found in the readiness with which they have favored the extension of the elective system, which has been the special characteristic of President Eliot's administration.

No one has done more than the clergy to free Harvard of certain false theories as to study, and among the grand words they have uttered few have been more effective than those of Dr. Bellows in 1853, when in his lecture upon "The Ledger and the Lexicon" he sounded a call for a scholarly advance, and argued that it was not alone by following

¹In comparing early and late catalogues of Harvard College one is surprised to note that the proportion of Harvard alumni who have gained distinction in the learned professions, in politics, literature, and science has been fully maintained.

slavishly the old college curriculum that men became educated, but that business educates men; that nothing is truly beautiful that is not useful.

"The students in the college course to-day are all students of science. They are made to remember that history is a science, and that literature, political economy, and ethics are sciences as well as arts." Personal relations are without restraint, and every kind of study desired can be pursued, and theologies, one and all are welcome.

The students in 1889-90 were—

Freshmen	323	Lawrence scientific.....	65
Sophomores	282	Physicians	290
Juniors	244	Ministers	35
Seniors	278	Lawyers	254
Special students.....	144	Bussey Institution	2
Veterinary students	20	Graduate department.....	107
Dentists	35		

As Henry C. Badger says in the article¹ from which we have already quoted:

One of the most promising facts that Harvard College has to present to the world to-day is that the mental life there is so vigorous. The examination of a teacher is now quite as sharp as that of a student. The question continually asked is, What is he doing? Is he growing? Is he learning? Is he producing anything? From 1881 to 1885 in 5 years the printed publications of Harvard University and its officers numbered nearly 1,800. These were books, pamphlets, magazine articles, and contributions to newspapers. Five hundred treat of literary topics, while over 1,200 treat of questions of science. When the teachers work thus the scholars are not idle. The central fact of student life at Harvard is that it is a working school.

The standard in the courses of study are all the time advancing, while methods are improved and facilities are increased.

A new help to students' work is for the professor to gather out of the whole library such books (no matter how many) as he wishes his class especially to study. These are put in an alcove under his name. His pupils have access to them all day and take them over night, returning them next morning. This plan is new, but it grows in favor. In 1880 thirty-five teachers thus reserved 3,330 books. In 1886 fifty-six teachers reserved 5,840.

THE LAWRENCE SCIENTIFIC SCHOOL.

Until near the middle of the present century the ecclesiastical influence in the management of the college and the schoolboy quality of the students had not greatly changed. But at Harvard, as elsewhere, the sudden and rapid development of scientific knowledge called imperatively for a change in the old system, and here, as elsewhere, the experiment was made of forming a distinctly scientific school growing up within the university, but independent of the college. This resulted in an improvement in the method of instruction, as also in the relations of

¹ Magazine of American History.

the pupils to the teachers. In 1847 Mr. Abbott Lawrence, by a gift of \$50,000,¹ founded the Lawrence Scientific School and established two professorships, those of engineering and geology. He afterwards gave funds for the erection of a building to contain the laboratory and lecture-room of the professor of chemistry and a second to contain the lecture rooms and collections of the professors of geology and engineering. Twenty-five thousand dollars was readily subscribed for a telescope and observatory. This was then the only school of the kind in this country that was connected with a collegiate course of instruction.

But for over 30 years the problem was how to accomplish the two ends of giving a special course of education to men who desired a training in science, but not a scholastic education, and of employing the same resources for satisfying the demands that grew out of the scientific part of a full collegiate education. In short, the school did not meet the expectations of its projectors. This appears from the report of the first committee of the overseers who visited the school in 1849, and of which Edward Everett was chairman. Although it was the offspring of the college faculty it was regarded by this body with indifference, for the reason that it was not accomplishing the work they had designed for it. Their thought was to have an undergraduate course, consisting mostly of required studies, and a postgraduate course, made up exclusively or mainly of elective studies, the latter only to be under the direction of the Lawrence Scientific School. It was to be organized as a school of literature and science, and was to confine itself to doing advanced work in the several branches of these departments. The idea, as expressed, was "that more than one of the professors had time at his disposal entirely free from any duty to the undergraduates which he could with propriety devote to the instruction of more advanced pupils."

In the prospectus for the scientific school for 1847-48 it was announced that the number and choice of studies to be pursued would be optional on the part of the student, and that "attendance upon the lectures and recitations would be voluntary." Only such young men were desired in the scientific school as possessed "stability of character and firmness of purpose, which would insure a faithful performance of duty without academic discipline." It seems that this school of literature and science, as projected by its founders, never existed except upon paper. It never assumed the character of a postgraduate department. Moreover, the methods of instruction were sometimes faulty. The tendency was to train men in special fields of learning and leave them uninformed in many subjects which are necessary to an education.

From 1847 to 1877 more than four-fifths of the persons enrolled as members of the school were not possessors of an academic degree; after 1855, however, scientific students were subject to the same college regu-

¹ This was then the largest amount ever given at one time during the lifetime of the donor to any public institution in this country.

lations as the candidates for the degree of bachelor of arts. Thus the school gradually lost all the distinctive features of an advanced department, and finally reached such a condition that its students were not entitled even to rank as the equals of college undergraduates. This was the result of the rule which demanded of candidates for admission to the school either an inconsiderable examination, or in some cases no examination at all.

The catalogue of 1869-70 stated that the number and choice of studies were to a limited extent optional. In the departments of engineering and chemistry examinations were held each term, and no students were admitted to an examination for a degree in those departments who had not passed all the term examinations. The year began a week later and closed two weeks earlier than the college, with a winter vacation of one week.

But President Eliot having taken the ground that young men without previous systematic training were unfitted to follow the course of instruction given in the scientific school, the faculty decided in 1872 to reorganize the system, with the purpose of making the relations of the school and college more intimate, and rendering each helpful to the other; by consolidation of the two chemical laboratories, by enlargement of the course in engineering, by introducing a more complete study of physics in the course of the scientific school, by throwing open the college halls to scientific students, by opening courses of study as electives for undergraduates in college, by offering a course of 4 years in civil and topographical engineering, and by making the examination for admission nearly equal to that for admission to the college; by these and other means a coalition was effected which greatly increased the capacity both of college and school to satisfy the needs of both classes—those who desire a special study of science and those who wish to incorporate the study into a more general scheme.

Since that time the requisites for admission have been further increased, but better even than this, there has been a vast improvement in the course of instruction.

In the early history of this school nearly all students were found in the three departments of geology and zoölogy, chemistry, and engineering. Up to 1872 only 183 young men had received the degree of bachelor of science, although in 1861 an attempt was made to do away with special students and compel candidates for a degree to pursue a 2-years' course before entering upon any special studies. The faculty finally adhered to the old method of instruction. Each student, therefore, as a rule, continued as before to receive his instruction in a single department from a single professor. But with the introduction of the new order of things the school (into which was merged the School of Mining and Practical Geology) offered five courses of instruction, each of which continues through 4 years. These comprise (1) civil and topographical engineering, (2) chemistry, (3) geology, which includes nat-

ural history, (4) biology and natural history, and (5) electrical engineering, which includes mathematics, physics, telephone and dynamos. All students who complete any one of the above courses receive the degree of bachelor of science. The grades of the degree are *cum laude*, *magna cum laude*, and *summa cum laude*.

The courses of instruction in chemistry to the graduates and undergraduates of Harvard College, and to the students of the Lawrence Scientific School, are given in the laboratory.

The chemical laboratory occupies the whole of Boylston Hall, which was erected in 1857 with a fund bequeathed for the purpose by the late Ward Nicholas Boylston, and subsequently largely increased by subscription.

Besides several private laboratories and preparation rooms, the building contains five large laboratories for students. A room on the upper story with one hundred desks is especially devoted to qualitative and descriptive work. On the lower story a laboratory with twenty-four places is wholly reserved for quantitative work, and connected with it is a weighing room and library, a furnace room, and a room of nearly constant temperature for gas analysis and thermo-chemistry. On the same story is a laboratory for organic work with twelve places, and with contiguous rooms for organic analysis, distillations, and similar processes. In addition, there is a laboratory for advanced students, and a laboratory with sixty-four places for the most elementary class has been recently fitted up. On the second story is a mineralogical laboratory, with a collection of minerals especially selected and arranged for the use of students. Each of these laboratories is under the charge of a competent assistant.

In addition, Boylston Hall contains the large and valuable mineralogical collection of the university, which is open to the public on weekdays from 9 to 5 o'clock, and also an extensive collection of chemical preparations and apparatus.

All the instruction in physics to undergraduates, graduates, members of the Lawrence Scientific School, and special students is now given in the Jefferson Physical Laboratory, which accommodates the various physical cabinets. This laboratory is provided with the most recent apparatus for electrical measurements, and with other instruments necessary for the most delicate experiments in magnetism, or in determining the velocity of light.

With the first establishment of the Lawrence Scientific School it was the intention to incorporate with it the work in natural history, and Prof. Louis Agassiz was appointed to the chair of zoölogy and geology, and was looked upon as the leader in the movement to make natural history a department of science, properly so called. This accession of Louis Agassiz, as also of that of Eben Horsford, to the faculty of the Lawrence Scientific School—two men who had been trained in the German universities—was most fortunate. They brought with them a

sense of the peculiar freedom of students in the old-world universities, and showed that a close relation could exist between teacher and pupil to the immense advantage of the latter. The energy and enthusiasm of that marvel of genius and scholarship, Louis Agassiz, were immensely contagious.

His popular lectures in Boston were an event in that lecture-ridden city. The school bought his collection, but had no place to display them, and they were stowed in sheds, cellars, and out-of-the-way buildings, never to the despair, but certainly to the deep vexation of this enthusiast. In 1859 the influence of Agassiz, which for 10 years had been growing steadily, resulted in the establishment of that magnificent enterprise, colossal in its plan, and great even in its present execution—

THE MUSEUM OF COMPARATIVE ZOOLOGY, NOW CALLED THE UNIVERSITY MUSEUM.

Professor Agassiz, to whom the museum largely owed its origin, was chosen the first curator and devoted his time incessantly to it until 1864.

Towards the accomplishment of so grand a purpose the citizens of Boston gave \$120,000, and the State legislature, moved by the eloquence and enthusiasm of the great naturalist, granted the munificent sum of \$100,000, to be paid from the sales of land belonging to the Commonwealth in the Back Bay.¹ The direction of the management of the museum was intrusted to the faculty, while its property was placed in the hands of the board of overseers.

In this building are found all the natural-history collections of Harvard College, with the exception of the herbarium (which is in the building connected with the botanic garden), the mineralogical collections, and also the museum library, which contains over 18,000 volumes. Twenty courses of instruction in natural history are given in the building devoted to the natural-history laboratories, which are connected with that of the museum.

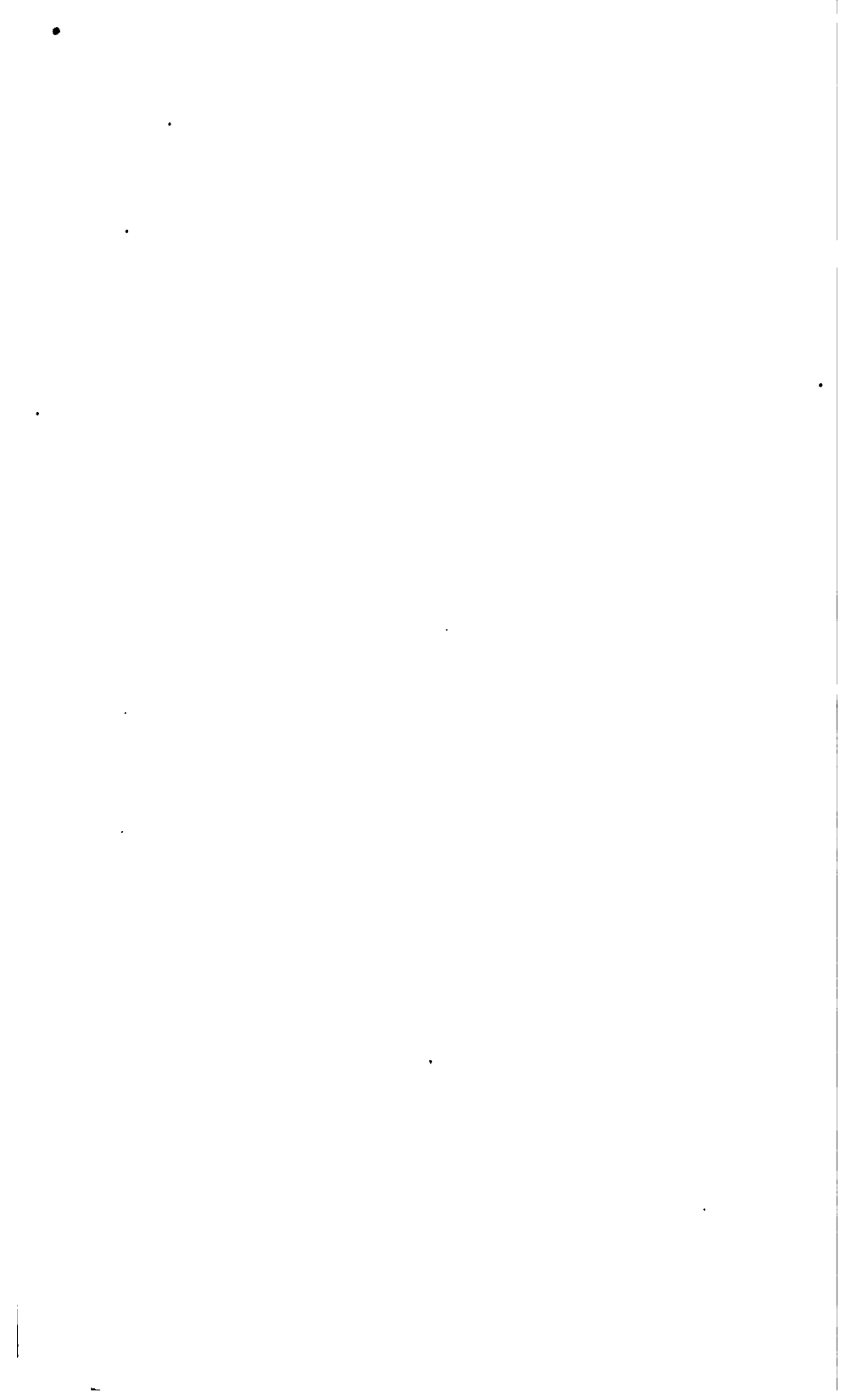
In 1863 the legislature granted \$10,000 to aid in the publication of an "Illustrated Catalogue of the Museum."

The publications of the museum consist of an annual report and of an octavo bulletin and memoirs in quarto. The bulletin and memoirs are devoted to the publication of original work by the professors and assistants of the museum, and of investigations carried on by students and others in the different laboratories of natural history.

The exhibition rooms open to the public are the synoptic room, the rooms containing the systematic collections of mammals, birds, reptiles, fishes, mollusks, crustacea and insects, and radiates, sponges, and protozoa; also the rooms devoted to the faunal collections of Europe, of North and South America, the Indo-Asiatic, the African, and the Australian realms.

The museum is under the management of a faculty, who nominate the

¹ In 1868 the Massachusetts legislature granted the sum of \$25,000 a year for 3 years, if a similar amount should be raised by private subscriptions. This was to be devoted to the extension of the building. In 1874 the legislature voted the further sum of \$50,000, provided the friends of the college raised a fund of \$250,000.



curator, the Sturgis Hooper professor, and appoint the assistants. The curator is charged with the direction of the scientific and educational interests of the museum, as well as of its relations to the public.

Considering, therefore, the magnitude of the facilities offered and of the work accomplished in this and other departments of the scientific school, we think the facts fully warrant President Eliot in stating it as his conviction that "there is no institution in the world which offers richer and more varied opportunities for the study of natural history than the Lawrence Scientific School."

The engineering department has always constituted the strength of the school. The thoroughness of the course is attested by the fact that a very large proportion of the graduates in engineering have become presidents or professors in the technical and scientific schools throughout the country.

Still, notwithstanding the great impetus given to the study of science during the last 35 years, the number of students in the scientific school has not increased; on the contrary, it has fallen off. The reason of this may be sought in part in the rapid extension of the elective system and in the arrangement of the studies of the curriculum, by which, after the freshman year, a student may devote himself almost exclusively to science. It is also doubtless true that the advantages now offered at the Institute of Technology in Boston tend to draw many students thither who would otherwise go to Harvard. The courses now furnished in the Lawrence Scientific School are designed to be fully equal to those pursued in the college, and the alumni of the two departments—that is, the bachelors of arts and the bachelors of sciences—stand very nearly upon the same footing. The scientific school is certainly very richly endowed, and can afford to maintain or even increase its present high standard, in the full confidence of permanent and complete success. Its influence upon Harvard and also upon other institutions has been very strong. It was the forerunner and has been in some degree the type of the numerous scientific and technological schools which have sprung into existence since 1850. These new schools for many years drew their teachers not only from the graduates of engineering, to which we have referred, but also largely from other students or graduates of the Lawrence Scientific School. Twenty years ago it was true of the Massachusetts Institute of Technology that out of 13 professors in its faculty 9 were graduates of this school. A year or two ago it was reported that the Scientific School was to be absorbed by the college.¹ The college faculty is said to have refused to take charge of the candidates for the degree of bachelor of science. At all events, Professor Chaplin, the vigorous dean of the school, has run its membership up to 65, showing a gain of 30 students this year—1889-90.

This school has done an important work in liberalizing the instruction

¹This was done in 1890, and the Lawrence Scientific School is now under the charge of the faculty of arts and sciences.

and improving the methods in the college. This has been accomplished in part by the personal influence of some of the teachers in the scientific school, but much more perhaps by the early adoption of a laboratory method of teaching chemistry and zoölogy and by encouraging large attainments in single subjects rather than small attainments in many subjects.

Finally, the Museum of Comparative Zoölogy, with its rich and varied treasures—a monument to the labor, learning, and generosity of the first and second Agassiz—is a direct and most important result of the organization of the Lawrence Scientific School.¹

Important changes were made in the scientific school in 1888-89. Latin was dropped as a requirement for admission, and English and American history was substituted; so that the requirements are now English and American history, algebra, plane geometry, logarithms, and plane trigonometry, physics, English, and French or German, the examinations in all these subjects being identical with those required for admission to Harvard College in the same subjects. It was hoped by this change to bring the school into better relations with high schools which teach neither Greek nor Latin; and there are indications that this object has been partly accomplished.

The former 4-years' course, called mathematics and physics, was converted into a course on electrical engineering.

It is encouraging to note that since the appointment of Professor Chaplin in 1885 to be professor of engineering and dean, the Lawrence Scientific School has taken a new lease of life. The number of students has quadrupled, the courses of instruction have been readjusted and improved, and the general administration has been efficient and careful as regards the students, and suited to win confidence and coöperation from colleagues, parents, school-teachers, and all friends of the school and of the education which it offers.

THE BUSSEY INSTITUTION.

Closely connected with the Lawrence Scientific School is the Bussey Institution of Horticulture and Agriculture. For this department of college work Harvard is indebted to the munificence of Benjamin Bussey, of Roxbury, whose will bears the date of July, 1835, wherein the President and Fellows of Harvard College are charged to establish at Woodland Hill, Roxbury, "a course of instruction in practical agriculture, and the various arts subservient thereto." In May, 1861, the trustees of the will transferred to the president and fellows an amount of property estimated at \$413,092.80. The income of half of this was immediately applied in accordance with Mr. Bussey's direction, one-quarter to the use of the divinity school, and one-quarter to the uses of the law school at Cambridge. The remaining half was left to accumulate for a building fund.

¹ Prof. Alexander Agassiz, who is now about to retire from the directorship, has donated more than a quarter of a million dollars to the equipment of the museum which his father founded. "The vast building has risen under his eye, been filled with enormous collections systematically arranged, and made ready for permanent use. An endowment makes the continuance of his plans as sure as human forethought can ordain. He has fulfilled his purpose of raising the noblest monument to his father which son's hands ever built, and it is natural that he should now wish to step aside and leave the routine duties of the directorship to be performed by another."

This department was not, however, organized until 1870-71, when three professors were chosen to fill the chairs of horticulture, agriculture, chemistry, and applied zoölogy. In the following year commodious buildings were erected on the farm—a superb estate—which is near the village of Jamaica Plain, now Boston, about 5 miles southwest of the center of the city. The institution is thus near enough to Cambridge to permit the use of the college library and the rich scientific collections of the university, and to have the studies illustrated at the botanic garden, the greenhouses, propagating houses, and field experiments.

It is, in general, meant for young men who intend to become farmers, gardeners, florists, or landscape gardeners; as well as for those who will naturally be called upon to manage large estates, or who wish to qualify themselves to be overseers or superintendents of farms, country seats, or public institutions.

Instruction is given by lectures and recitations and by practical exercises in laboratories, every student being taught to observe phenomena, to make experiments, and to study specimens for himself.

But besides the regular studies students of the Bussey institution are recommended to pursue courses either at Cambridge or in Boston upon surveying and geology, or make selections from a great variety of subjects, which have a near or remote bearing upon the study of agriculture or horticulture. Students of the institution in full standing are admitted free to all the courses of instruction in the university (about 200 in number) except special laboratory work.

The distinct work of the Bussey Institution extends through but a single year, but students who wish to obtain its degree are required to take a course of 3 years; that is, they must take a preliminary course of 1 year at the Lawrence Scientific School, or prove by examination that they possess an equivalent amount of knowledge. Furthermore, on the completion of the course already described, they must devote a year of advanced study at the university, and to practical research in agriculture, horticulture, stock-raising, or in botany, anatomy, or chemistry, as applied to those arts, and show that they have acquired a thorough knowledge of the subjects in which they present themselves. Comparatively few students have as yet resorted to this school, and the number is even smaller now than it was a few years ago. The explanation seems to be found in the crude ideas that prevail in this country upon the subject of education. In our agricultural colleges the vulgar notion has generally been held that manual labor is an essential part of the course of instruction. This, however, receives no countenance at the Bussey Institution. The members of its faculty hold that it is not their business to attempt to teach what can be best learned by experience upon almost any farm. Not until the shackles of prejudice against systematic and thorough training in agriculture and horticulture have been cast off do they believe that there will be large accessions to our agricultural schools, or such interest

shown in the scientific culture of the soil as has long characterized some of the countries of the old world. The Bussey Institution is well endowed and can bide its time.

THE ASTRONOMICAL OBSERVATORY.

In 1839 William Cranch Bond, then in the employ of the Government, was given permission to transfer his whole astronomical, meteorological, and magnetic apparatus to Cambridge, where he was appointed by the corporation astronomical observer to the university, the Dana house being fitted up for his use. To erect such further buildings as were immediately required, \$3,000 was readily subscribed. It was found that the meridian line of the transit instrument intersected the top of Blue Hill, in Milton, where a tower was raised of round and solid masonry 17 feet high above the foundation. This has since served as a sure reference for the adjustment and verification of the instrument.

The apparatus belonging to the college, together with that brought by Mr. Bond, sufficed for the accurate observation of "eclipses, occultations, moon culminations, meteorology, and the elements required in terrestrial magnetism," but there was yet lacking a refracting telescope equatorially mounted, a mural circle, and a large transit instrument. To remedy this lack the American Academy of Arts and Sciences appropriated \$1,000, with which the requisite instruments were purchased. This was done for the special purpose of securing "a series of observations in meteorology, and the elements of magnetic power," in conformity with a request from the Royal Society of Great Britain to American scientists.

These instruments were deposited in the university, and Harvard became for the time one of the few magnetic stations on this side of the Atlantic.

Soon after the establishment of the observatory, in anticipation of a new building, 12 acres of land, which belonged to the Craigie estate, were purchased by the college.

In the interest of economy only the 6 acres, which form a part of the rising ground called Summer Hill, were retained for the observatory. In 1843, under the impulse of a renewed interest in astronomy that had been awakened by the celebrated comet of that year, at a small meeting held in the office of J. Ingersoll Bowditch, of Boston, measures were taken which resulted in the subscription of a considerable sum for the purpose of obtaining a large telescope, equatorially mounted, and a suitable building to receive it. With these funds the present observatory building, which is upon a hill to the north of Elmwood, with the exception of the west wing, added in 1851, was completed in 1846, and the instruments removed from the Dana house. During the next year the equatorial telescope from Munich was received and mounted. The aperture of the telescope is 15 inches, and the focal length 22 feet and 6 inches. Its value is about \$25,000.

A transit circle, made in London, arrived in 1848. Shortly before this time two comet seekers had been given by Mr. Bowditch and President Quincy, respectively. Since then a chronograph, spectroscope, meridian circle, and an equatorial telescope of 5½ inches aperture, with a driving clock, and also apparatus for photographing

the sun, and other instruments, have been added. In 1849 the observatory was placed on a firm basis by the bequest of Edward Bromfield Phillips (class of 1845), who left to the college \$100,000.

The interest of that sum was to be applied annually for the payment of salaries at the observatory, and for the purchase of books and instruments, and special provision was made for the publication of its observations. These are intended to furnish accurate and systematic data respecting the heavenly bodies, for the advancement of astronomical science, and also to coöperate in geodetical and nautical surveys, to contribute to the improvement of tables useful in navigation, and in general to promote the progress of knowledge in astronomy and the kindred sciences. The observatory was made a distinct department of the university in 1854.

There are now about 5,000 works (including pamphlets) in the library. These relate principally to astronomical subjects.

In 1872 a method was adopted of transmitting to Boston signals for the regulation of time, which are now used by various establishments. The method is as follows: A local circuit within the observatory is broken every 2 seconds by a clock regulated to mean time and kept $15\frac{1}{4}$ seconds faster than mean time at the observatory, in order to allow for the difference of longitude between Cambridge and the state house in Boston. The clock is so constructed as to omit one of its signals before the beginning of each minute, which is consequently marked by the first signal given after the pause. The pause before the beginning of every fifth minute is made longer than the others by the omission of several additional signals.

This observatory was founded for the purpose of scientific research in all departments of astronomy and has been exceedingly efficient under the direction of the two Bonds, Professor Winlock, who died in 1875, and the present faculty.

The income of the observatory has been yearly increased during the last few years. The amount is such that astronomical science should be materially advanced by its proper expenditure. To secure this end so far as possible the field of work of the observatory has been widened.

Anyone properly qualified to pursue the study of practical astronomy is admitted to the observatory as a student. Such students are permitted to take part in the observations and other work carried on at the time in the observatory, as well as to make use of the observatory library. They also receive from the officers of the observatory such assistance in the study of any branch of astronomy as can be rendered without interference with current work.

THE BOTANIC GARDEN.

The botanic garden, founded in 1805, is situated on the northwest corner of Garden and Linnean streets. The board of visitors (under whose control were the funds of the professorship of natural history) were intrusted with the selection and purchase of a site for a botanic garden. The choice of a site was made in October, 1807, and to this Andrew Craigie, of Cambridge, added the valuable donation of 4 acres

of adjoining land. The funds for its formation and support were raised partly by subscription and partly by a grant from the State of some wild lands in the District of Maine.

At a later period the trustees of the Massachusetts Society for Promoting Agriculture, who formed a part of the board of visitors to the professorship of natural history, made known to the corporation their desire to give up that trust. They were of the opinion that it would be better to have the whole control of the botanic garden placed in the hands of the corporation. Hitherto it had been in the hands of these trustees.

The present institution was completed, and indeed the current expenses met, with funds that were derived from the State grant and private subscriptions.

As one enters from Garden street, to the right is the garden proper, and to the left a chain of buildings in the following order: The professor's house, built in 1810, the herbarium, with a valuable library, laboratory, and lecture room attached, and the conservatory.

The herbarium is the finest in this country, the room containing the large and choice collection of specimens is surrounded with a small gallery from which hang pictures of the most distinguished American and European botanists.

This building was erected through the liberality of Nathaniel Thayer, in 1864 at a cost of \$15,000. The adjoining laboratory and lecture room were added in 1871 through the munificence of an anonymous donor. In the green-houses preference is given to native plants, and no pains are spared to bring together the largest collection possible. This is already very extensive and contains about seven thousand species of flowering plants.

The ruling spirit here for over 30 years was Prof. Asa Gray, whose name is known throughout the country by the text-books in botany which have come from his hand. By his influence, also, much of the funds at the command of the garden was contributed, and it is an interesting fact that a large amount of money, notably \$16,000 in 1871, was contributed by that modest donor, who appears too infrequently upon lists of magnified subscribers as "A Friend." Professor Gray gave up active work as professor and director of the garden in 1873, in order that he might give himself more entirely to his great work, "The Flora of North America."

The instruction in botany is given at the botanic garden, and the scientific work of the university is to a large extent done beyond the immediate walls of the college.

THE ARNOLD ARBORETUM.

The Arnold Arboretum was founded a few years ago with funds donated for that purpose by the late James Arnold, of New Bedford. Its object is to secure favorable conditions for scientific research and experiment in arboriculture, forestry, and dendrology, and a place for a museum of trees and shrubs suited to the climate of Massachusetts. The arboretum occupies a portion of the Bussey farm in West Roxbury, 160 acres in extent, and, under a special arrangement with the city of

Boston, is open to the public every day in the year from sunrise to sunset. The living collections are supplemented by an herbarium, museum, and library. These occupy temporarily the "Dwight House," at the corner of Warren and Cottage streets in Brookline, until a suitable library and museum building can be erected on the arboretum grounds.

In the report for 1887-88 President Eliot thus refers to the unsatisfactory progress made by reason of the failure of the city to coöperate efficiently with the university:

So far as the planting of trees was concerned, the season was lost * * * because no progress was made on the roads which are to be built under the direction of the park commissioners. * * * The university has no right to make the roads, * * * and the city postpones the construction of them. The consequence is that many specimen trees, carefully selected and tended for years, are lost to the arboretum because they get too large in the nurseries. The time lost for the formation of an instructive and beautiful arboretum will, of course, be much greater than the actual delay in the construction of the roads.

Later he reports that—

The work of planting the permanent collection at the Arnold Arboretum has been suspended for two years because the park commissioners of the city of Boston have been unable to extend their roads through the arboretum since the season of 1887. This autumn (1889) the commissioners have resumed operations, and it is hoped that the director will be enabled during the coming season to make large additions to the permanent planted collection. It is one of the functions of the arboretum to distribute plants, cuttings, and grafts to other botanical and horticultural establishments. The report of the director gives evidence that this function is generously performed; for he mentions that, in 1888-89, 16,146 plants, cuttings, and grafts were distributed from the arboretum, and that 2,809 similar objects were received in return.

THE PEABODY MUSEUM.

The Peabody Museum of American Archæology and Ethnology was founded in 1866 by George Peabody, of London, whose total gift was \$150,000, of which \$60,000 was to be invested as a building fund, \$45,000 appropriated to the formation and care of collections having special reference to American archæology and ethnology, and \$45,000 for the foundation of a professorship.

In the original instrument of trust the founder assigned to the trustees three distinct duties: (1) The forming and preserving of collections. (2) The nomination of a professor who should have charge of the collections, and deliver lectures upon themes connected with them; the professor to be appointed by the President and Fellows of Harvard College. (3) The erection of a museum.

The trustees of the fund at once secured temporary quarters for the museum in Boylston Hall, and obtained by gift and purchase several valuable collections, including those of Mortillet, Clement, Claus, Rose, and Nicolucci, containing many thousand specimens illustrative of the prehistoric times of Switzerland, Italy, France, and Northern Europe. Also the famous Squier collection of Peruvian crania, and the equally important gift of ancient Mexican pottery from Caleb Cushing. The

late Jeffries Wyman, curator of the museum until 1874, made extensive researches in the shell heaps of the Atlantic coast, and in many ways added largely to the museum. The archaeological and ethnological collections made by the late Professor Agassiz, and accumulated at the Zoölogical Museum, were given to the Peabody Museum, as were also those belonging to the Boston Society of Natural History, the Boston Athenæum, the Massachusetts Historical Society, and the Boston Marine Society. A valuable series of ancient vases from Etruria was presented by Signor Castellani, and many thousand specimens have been received from various other sources. Of the later additions, mention should be made of the extensive collection from Peru presented by Alexander Agassiz, the implements found in the glacial drift in New Jersey, given by Dr. C. C. Abbott of Trenton, and a valuable general collection from Clarence B. Moore (class of 1873).

Extensive explorations have been made in various parts of America, particularly under the direction of the present curator, from which an immense amount of valuable material has been derived, forming large and complete collections from the ancient mounds and graves in Tennessee and adjoining States, as well as large collections from Ohio, Kentucky, Indiana, California, Utah, Arizona, New Mexico, Mexico, and Central America. The additions made during the past seven years; and the authenticity of the material, probably make the museum the most important in the country for the study of American archæology. A part of the projected museum building was completed and occupied in 1877. According to the plan, the Peabody Museum will occupy the southern wing of the building, while the northern wing, which is about 230 feet to the north, is occupied by the museum of comparative zoölogy. An addition to the building 60 by 60 feet was erected during 1888-89, but will not be ready for occupation for a year or more. This completes one-half of the contemplated structure. The curator receives special students in the several departments of the museum.

The publications of the museum consist of the annual reports, which also contain special papers on American archæology and ethnology. Twenty-one reports have been published. In future the special papers will be issued under the title of "Archæological and Ethnological Papers of the Peabody Museum."

A Semitic museum is to be soon established by the liberality of Mr. Jacob H. Schiff, of New York. This gift will provide a nucleus which will naturally attract similar objects from the East, and which in due time will be classified and arranged and used to illustrate instruction, besides affording opportunity for original investigation in this interesting branch of inquiry. The Peabody Museum will offer temporary quarters to the new collection.

Among the most active forces of the university are the graduate department, the observatory, the university museum, the museum of American archæology and ethnology, the chemical laboratory, the physical laboratory, the botanic garden and her-



HARVARD COLLEGE—AUSTIN HALL, THE LAW SCHOOL.



HARVARD COLLEGE—MEDICAL SCHOOL. (BOSTON.)

barium, the Arnold arboretum, and the university library. To show the importance which President Eliot attaches to these departments, it is enough to say that he gives up one-third of his newly issued annual report (1889-90), on the affairs of the university, to their doings and needs. To show the magnitude of these branches, it is enough to point out that the university museum has a total floor space of more than 4 acres, that the university library contains more than 700,000 titles, of which 360,000 are bound volumes, and that the observatory, run at an annual expense of over \$43,000, is conducting observations of the greatest possible interest to the entire scientific world, not only in Cambridge, but in southern California and Peru.

The chemical, physical, botanical, and other laboratories are constantly engaged in original investigations of great value. The labors of Professors Cooke, Trowbridge, Goodale, Farlow, Shaler, and Mark are not simply those of instructors of raw recruits in science, useful as they unquestionably are in that service. Their best work is done in advanced research, aided and accompanied by little bands of accomplished students, chosen from among the flower of American graduates. Side by side with the machinery which polishes rough youth into mature scholars is machinery of a different kind, working away steadily on the mass of unassorted human knowledge, and that larger mass of unascertained truth which tempts the scientist into original research. * * *

It is noticeable from the statements in President Eliot's report that the principal gifts to Harvard during the past year, and her chief demands for the near future, relate more closely to this second form of activity than to routine teaching. Professor Pickering dilates upon the gift of \$50,000 by Miss Bruce for astrophotography. Professor Cooke announces that \$34,500 has been raised for the mineralogical museum. Professor Goodale reports that the endowment of the botanic garden has increased \$60,000 in 10 years; that \$80,000 has been obtained for the erection of the botanical museum, and that \$40,000 is needed at once for the herbarium. The new building, which makes part of the great university museum on Oxford street, will contain not only the botanical collections, but also a large lecture room and spacious laboratories and storerooms for the entire department. Librarian Winsor earnestly calls for relief from the pressure on the university library. * * * An equally pressing demand is for \$10,000 to erect a safe building for the records, photographic plates and other priceless treasures of the observatory.¹

The whole Oxford street front is now built as far as the southwestern corner-block, and it is probable that a large part of the new structure will be occupied within the current year. Thus about three-quarters of the great quadrangle planned by Professor Agassiz in 1859, with what seemed to many a visionary enthusiasm, are already built.

THE MEDICAL SCHOOL.

This is the oldest of the professional schools of Harvard.

The Boston Medical Society, an association formed in 1780, under the lead of several of the principal physicians in the city, may be said to have given the impetus to the movement which resulted in its establishment. For, under the auspices of this society, Dr. John Warren, a brother of Gen. Joseph Warren, who fell at Bunker Hill, delivered in the winter of 1781 a course of anatomical lectures, which were so successful that President Willard and some of the corporation who had attended them were led to think of organizing a medical school to be connected with the college. At the request of the corporation, in 1782,

¹ From "editorial" in Boston Herald of February 7, 1890.

Dr. Warren drew up the outlines of a plan, which in its main features was accepted by them and confirmed by the board of overseers; but the school did not go into operation until the next year, "the lectures being delivered in Cambridge before a small number of medical students and those members of the senior class in college who had obtained the consent of their parents."

The history of the school may be divided into three periods: 1783 to 1810, 1810 to 1870, and 1870 to the present. During the first period the faculty, consisting of three professors, delivered their lectures in Cambridge, a distance, according to the route then taken by the way of Roxbury and Watertown, of 8 miles from Boston. The lectures were attended by medical students and by such of the senior sophisters as chose to pay a small fee for the privilege. Students who were not bachelors of arts were expected to have a knowledge of the Latin language and an acquaintance with natural philosophy.

In 1800 Ward Nicholas Boylston, esq., laid the foundation of the "Boylston Medical Library" by the donation of a valuable collection of medical books consisting of more than 1,100 volumes. He established also a fund and directed that the income from it be applied to the purchase of treatises on medical, anatomical, physiological, and chemical subjects. He secured to the college an annuity of \$100 to be divided into two prizes of \$50 each to be given annually to the authors of the two best dissertations on medical and allied subjects. Later in his life the same benefactor made other and valuable additions to the medical library, and to the anatomical museum, connected with it. In November, 1819, the medical faculty presented the President and Fellows of Harvard College "the library of the Massachusetts Medical College," which had been collected chiefly by their own efforts and from their own resources for the benefit of their pupils. Still the medical faculty continued to assume the whole care and management of this library as one of their college duties, and in addition bore any expense connected with it, although its inspection and control were vested in the president and fellows.

Prior to 1810 only 45 candidates received the degree of bachelor of medicine. The degree of doctor of medicine was then conferred only upon bachelors of medicine of 7 years standing. During these early years the college was lacking in facilities for a high standard of medical instruction. Its location in Cambridge was also unfavorable, and in 1810 it was determined to remove it to Boston, where it might be in close proximity to the hospitals. Thus by its enlargement and removal to Boston a most decisive step was taken. In the same year new regulations for admission and graduation were adopted, and these with but little change remained in force until 1870. By these statutes the terms of admission remained the same as while the school was in Cambridge, but the degree of doctor of medicine was now substituted for bachelor of medicine; students were required, (1) to attend two of the 3 or 4

months' courses of the lectures delivered at the Massachusetts Medical College, by each of the professors; (2) they were to be employed 3 years in their professional studies under the direction of a regular practitioner of medicine; (3) pass an examination (oral) in anatomy, physiology, chemistry, materia medica, pharmacy, midwifery, surgery, and the theory and practice of medicine, and (4) they were to write a dissertation on some medical subject. From this time the medical school entered upon a prosperous career, and has since maintained the character of one of the best medical schools in the land. In 1815 two professorships were created.

A building under the name of the Massachusetts Medical College was erected on Mason street in 1816 with money obtained from the bank tax granted by the legislature. The amount of the grant was over \$21,000. This building was afterwards sold to the Natural History Society, as the needs of the school demanded larger facilities.

In 1846 another building, now used for the dental school, was erected on a piece of land on North Grove street, given by Dr. George Parkman, which always retained the name of the Massachusetts Medical College though it belonged to the university. It is in the immediate vicinity of the Massachusetts General Hospital, and is a brick structure of three stories.

In 1831 the university boards reorganized the medical department, and adopted new statutes according to which the president, professors, and lecturers constituted a medical faculty with authority to elect a dean and adopt rules for the government of their department, provided that these did not conflict with the laws of the university.

In 1848 degrees were given to those who after attendance on two courses of lectures, one of which must have been in the Harvard medical school, were found upon examination properly qualified to receive them. A dissertation on a medical subject was required from each student who was a candidate for a degree. The fees charged were \$3 for matriculation, \$80 for the full course of lectures, and \$20 for graduation.

In 1849 there were seven instructors, and at the close of this period in 1870 the medical faculty was composed of nine professors and two adjunct professors. The number of students increased from 50 in 1820 to 301 in 1870. The quality of the students was not, however, maintained. In 1820 68 per cent. had received academic degrees, while in 1870 only 24 per cent. had received similar degrees.

When President Eliot assumed the presidency of Harvard University he found the condition of the medical college very unsatisfactory. In his report for 1871-72 he declares that—

The ignorance and general incompetency of the average graduate of American medical schools at the time he receives the degree which turns him loose upon the community is something horrible to contemplate, considering the nature of a physician's functions and responsibilities.

At the best schools the examination of candidates was private, hasty, and notoriously lax. No one had any guaranty whatever of the quality of the examination. It was the pecuniary interest of the medical faculties to have as many pupils as possible and to grant a large number of degrees, since their salaries were dependent upon the fees paid for attendance at lectures, and upon the charge for graduation.

The Harvard Medical School had long enjoyed a high reputation from the character of its professors, but it had been felt that the training was not as thorough or as formal as the profession demanded, and therefore at the close of the preceding year (1871) very radical changes had been made, which, in effect, revolutionized its methods and introduced a system which was more scientific and exacting than the one discarded.

The new plan went into effect at the beginning of the year 1871-72, and was as follows:

Instruction will be given by lectures, recitations, clinical teaching, and practical exercises uniformly distributed throughout the academic year, and the student will be expected to attend throughout the year just as he does in the college or the schools of theology, law, and science. Secondly, the course of instruction will fill 3 years, beginning with the fundamental subjects of anatomy, physiology, and chemistry in the first year, and carrying the student progressively forward until at the end of his third year he will have studied all the recognized subjects of a good medical education. Thirdly, laboratory work will be substituted for or added to the lectures on anatomy, physiology, chemistry, etc. Work in the laboratories is as much required as attendance at recitation and at lectures. Lastly, every candidate for a degree of doctor of medicine must hereafter pass a satisfactory examination in every one of the main subjects of medical instruction, and these examinations are to be, in part, at least, by questions, and answers upon paper, so that the governing boards and the professors may know what the standard for the degree really is.

According to Dr. Holmes:

The most essential change of all is that the instruction is made progressive, the students being divided into three classes, taking up the different branches in their natural succession, and passing through the entire range of their medical studies in due order, in place of having the whole load of knowledge upset at once upon them.

The year was to begin in September and was divided into semesters. The fees were not raised, although the quantity of instruction was greatly increased.

The success of this reorganization of the medical school fully met the expectations which had been formed. The instruction has been greatly increased in amount and improved in character, and now, in 1889, 25 professors and assistant professors and 26 instructors, besides those who give special clinical instruction, constitute the teaching force. The proportion of students who had received academic degrees nearly doubled in the first 6 years, and, more important than all else, this improvement of the quality of the students has introduced into the schools a new spirit of work. Besides this the average length of residence at the school has been greatly increased.

The main improvements made in the medical school in 1888-89 were

the expansion and readjustment of the instruction offered to graduates in medicine during term-time, and the establishment of numerous short courses for practitioners and advanced students to be given in the summer vacation. The new instruction is chiefly clinical; but some short laboratory courses are also offered. Thirty-one courses were announced for last summer. The gentlemen who give the summer instruction receive no compensation except the moderate fees paid by the students in the several courses; they clearly teach for other motives than pecuniary ones.

Candidates for admission must either show that they have passed the entrance examinations to Harvard College, or they must present a degree in letters, science, or medicine from a recognized college or scientific school; otherwise they must pass an examination in English, Latin, physics, and in some elective subject such as French, German, the elements of algebra or of plane geometry or botany. To secure the degree the candidate must be 21 years of age, must give evidence of having studied medicine three or four full years, have spent at least one continuous year at this school, and have passed the required written examinations. A four years' course of studies is now provided, but the completion of the three years' course is all that is required in order to obtain the doctor's degree.

The fees are as follows: For matriculation, \$5; for tuition for a year, \$200; for a half year alone, \$120; for graduation, \$30. There are a few extra fees for dissection, for chemical materials, etc.

The students have the opportunity to visit and receive clinical instruction in the Massachusetts General Hospital and the city hospitals, and also at the dispensary and eye and ear infirmary. Students are trained in observing and recording cases, and have opportunities to become acquainted with the use of the microscope, stethoscope, ophthalmoscope, and laryngoscope. They can also attend lectures in Cambridge on botany, comparative anatomy, zoölogy, optics, mechanics, electricity, and acoustics. The medical museum is large and valuable and constantly increasing, and students have access to a good collection of medical and scientific works at the city library, as well as to the Boston medical library, to which Dr. Holmes in 1889 presented his library.

Members of any one department of Harvard University have a right to attend lectures and recitations in any other department without paying additional fees, so that medical students have the opportunity to pursue at the same time scientific or other studies.

More and more the medical students spend the whole of their course at Harvard instead of pursuing a part of their course elsewhere, and the reputation for high scholarship which the school has gained is attracting large numbers from States and provinces outside of New England. The raising of the standard lessened for a time the number of students, but its ultimate effect is to increase the number in attendance, as well as to make it more prosperous financially. Another result during the

first few years after it went into effect was that the per cent. of students who had received academic degrees doubled. Still, out of a class of 87 members that entered in 1889 only 6 were graduates of Harvard.

In 1874 the project was set on foot to raise \$200,000 for the purpose of erecting a new building in which the Warren Museum, with its invaluable anatomical and pathological collections, might be secured against fire, and for providing some other much needed accommodations. This building, which was built at an expense of over \$250,000, was not completed and occupied until October, 1883. It is situated on the corner of Exeter and Boylston streets, Boston, and is a four-story fire-proof structure of brick, with sandstone and terra cotta decorations. The building fund was freely and generously contributed by friends of the school, and the building is by far the best for its purpose in the United States.

The faculty has arranged a greatly enlarged and improved plan of instruction for graduates, embracing all the branches of practical and scientific medicine. It is designed to supply those opportunities for clinical and laboratory study which have hitherto been sought in Europe by young graduates and practitioners.

In the light of the results achieved it seems evident that the improvements inaugurated in 1870-71 are to mark an epoch not only in the Harvard Medical School, but also in the history of medical education in the United States. Still, as long as half of the students have not received academic degrees the ideal has not yet been attained. It is proposed to increase gradually the requisites for admission with the hope that ere long the degree in letters or science will be indispensable in order to become a candidate for the degree of doctor of medicine, and that the medical degree will imply the successful prosecution of medical studies during four years.

THE DENTAL SCHOOL.

It is a little more than 20 years since the dental school was established. During that time the requirements to obtain a degree have been so constantly advanced that it stands to-day at the head of the dental schools of this country. The design of its faculty is to offer a complete course of instruction in the theory and practice of dentistry. This extends over 2 years and is progressive, the teaching of the first year not being repeated in the second. The requirements for admission are the same as those established for the medical school, except that Latin and the elective study are omitted. The school is located in Boston, that it may enjoy those advantages for clinical instruction which are found only in large cities. The first year, which precedes the 2 years' course of dentistry, is identical with that of the Harvard medical school, the instruction being from the same professors, and at the same time and place, and the examinations being coincident. The students have free access to the hospitals of the city, to the dissecting rooms, to museum and library of

the medical college, and also to all the courses of university lectures. Especially important are the advantages offered at the infirmary, which is a department of the Massachusetts General Hospital. At this institution one of the clinical instructors and the demonstrator are in attendance daily throughout the academic year, and patients are assigned to the students, and unsurpassed facilities offered for acquiring practical knowledge and manipulative dexterity.

During the year 1888-89 there were some 20 professors and other instructors and about 40 students. To obtain the degree of doctor of dental medicine the candidate must be of adult age and good moral character, and of the 3 full years which he has devoted to the study of dentistry or medicine, at least 1 continuous year must have been spent at this school. He must also have presented a satisfactory thesis, passed all the required examinations, which are conducted orally and in writing, and convinced the professors of operative and mechanical dentistry as to his ability to meet satisfactorily the requirements of his art. Besides he must deposit with the dean, to be placed in the museum of the school, a specimen of mechanical dentistry, or one of practical or pathological anatomy. There are no fees for matriculation, for the diploma, or for the demonstrators. The annual fees differ but little from those that the student must pay in the medical department.

The dental school has made only a small gain in attendance during the past 10 years, and does not yet rank on an equality with the other principal departments of the university, and perhaps it is well that a merely technical school should not have the dignity of ranking as one of the departments of the university. Certainly less is required for the entrance examination, and few of its students are college graduates, and none graduates of Harvard. Still, it must be admitted that the Harvard dentistry school has accomplished a very useful purpose by raising the standard of professional education for dentists, and by giving increased dignity to the profession in the estimation of the community.

THE SCHOOL OF VETERINARY MEDICINE.

In the summer of 1884 a fully equipped veterinary establishment was provided, which with its other facilities makes this school one of large resources for students who wish to become thoroughly practical, as well as scientific, veterinarians.

The hospital building, situated at the corner of Village and Lucas streets in the city proper, offers every advantage for the observation and treatment of sick animals. It is a substantial structure of brick, three stories high, and has been designed and built especially for its uses. Upon the first floor are the office, a large operating room lighted from above, five commodious box stalls (one of which is arranged for the reception of violent cases), and six ordinary stalls. On the second floor are twelve boxes and stalls of various dimensions, a room for dogs, containing about twenty kennels, a pharmacy, and a grooms' room. The

third story contains, besides the necessary lofts and workrooms, apartments for the assistant surgeon and house surgeon. In the basement there is a shoeing forge and a boiler room. Hot and cold water, steam heat, and gas are supplied throughout the building, and all pains have been taken to make the drainage and ventilation satisfactory.

Adjoining the hospital and connected with it is another brick building, erected entirely for the purposes of the school. This contains, on the lower floor, which is devoted to hospital uses, boxes and stalls for ten horses. Upon the second floor is the lecture room, in which a separate desk is provided for each student, and the seats rise each higher than the one before it. From this room a door communicates with the hospital, through which horses or other animals may be introduced for purposes of illustration. Upon the third floor in front is the dissecting room, two stories in height, lighted from above, with an asphalt floor, and heavily painted brick walls, making a room which has ample light, is well ventilated, and dry. In the rear is a students' reading room comfortably furnished, the walls being lined with bookcases which are intended to accommodate the library, to which the members of all the classes have access. Above this, on the fourth floor, is a room properly fitted with glass cases for the museum, and beside it a comfortable room for the house surgeons. The whole building is heated by steam.

The school also enjoys the use of commodious buildings and pastures at the Bussey farm. A forge for the shoeing of both sound and lame horses is provided, and the theory of orthopædic shoeing, as well as the shoeing of sound animals is thoroughly taught.

Besides the rich collection at the Warren Museum, to which the students have access, the school has the nucleus of a valuable collection of its own, which has already been added to by gifts of anatomical and pathological objects from friends, both within and without the profession.

In all departments cases will be placed under the care of the senior students, who will be expected to act in regular order as visitors and dressers, to keep a full record of all work done, and report the same to the class for criticism. In the same way it is expected that students will do the work of mixing and dispensing medicines in the pharmacy, that they may thus become thoroughly competent veterinary pharmacists.

All candidates for admission except those who have already passed satisfactory examinations at Harvard, or at some recognized college, or scientific school, must be examined in English, in arithmetic, and in one of the following subjects, viz: Latin, French, German, the elements of algebra, plane geometry, or zoölogy.

The following are the subjects studied:

For the first year.—Anatomy, physiology, general chemistry, and botany.

For the second year.—Practical anatomy, medical chemistry, materia medica, pathological anatomy, surgical pathology, theory and practice of veterinary medicine, clinical medicine, and clinical surgery.

For the third year.—Therapeutics, obstetrics, theory and practice of veterinary medicine, operative veterinary surgery, ophthalmology, parasites and parasitic diseases, clinical medicine, and clinical surgery.

The fee for matriculation is \$5; for a year's tuition \$100; and for graduation \$30. During 1888-89 there were twenty-one students in the three classes, and two special students.

In order to receive the degree of doctor of veterinary medicine the candidate must be 21 years of age, and of good moral character; must give evidence of having studied veterinary medicine 3 full years; have spent at least one continuous year at this school; have presented a satisfactory thesis; and have passed the required examinations.

THE LAW SCHOOL.

The Harvard Law School was the first in the United States to connect itself with a university. Previous to its founding only one is known to have existed in the country, and that was the celebrated school at Litchfield Hill, Conn., which had been established some 33 years earlier. The Harvard School was the first American institution which was authorized to confer the degree of bachelor of law. It took the lead of all schools whether in this country or in Europe in teaching the principles of English law. Its history begins in 1817, when the Hon. Asahel Stearns was appointed university professor of law. Two years before this the Royall professorship was founded, but Judge Parker, the incumbent, made no attempt to establish a department of law. All that the professorship required of him was the delivering of fifteen lectures annually to the senior class of the college. But the duties of the university professorship were to open and keep a school in Cambridge, for the instruction of the graduates of the university, and of others prosecuting the study of the law. During the 12 years that Professor Stearns remained at Cambridge the law department of the university, like the schools of Litchfield Hill and Northampton, were but little better than the customary instruction furnished in a lawyer's office.

Professor Parker says of the beginning of the law school, that its first class numbered three; that "instruction in that mode was an anomaly, lawyer's offices being in most instances the resort for a novitiate." The schools at Litchfield and Northampton were then popular rivals of Harvard. This was especially true of the latter school, which had a distinguished and popular advocate as one of its instructors and an enthusiastic judge as the other.

There were then no funds for the Harvard Law School.

Two rooms of very diminutive size, one of which contained a small library with the privilege of hearing the lectures on law to the seniors, was the endowment.

Up to the year 1829, when Professor Stearns resigned, little had been done to raise endowments or otherwise insure the success of this department of the university. But in the year just named the Hon.

Nathan Dane made a donation of \$10,000 for the endowment of a new professorship of law.

The duties of the office were to deliver a course of lectures on law and equity, arranged under the five headings, viz, the Law of Nature, the Law of Nations, Commercial and Maritime Law, Federal Law, and Federal Equity; and the same were to be treated "in such wide extent as the branches now are, and from time to time shall be, administered in the courts of the United States."

At Mr. Dane's request the Hon. Joseph Story, LL. D., of the Supreme Court of the United States, was appointed to fill the new professorship. It was the founder of this professorship who drafted in 1787 the celebrated ordinance for the government of the territory of the United States northwest of the Ohio River. This, it is said, was adopted by Congress without a single alteration, and thus to him the country became indebted, in a measure, for that wise law which excluded "slavery or involuntary servitude" from the Northwest and fixed forever the character of the population in those regions.

It was in this year, 1829, that the Harvard Law School was reorganized as a separate department. John Hooker Ashmun, esq., who then had charge of the law school at Northampton, was invited to assume the chair of the Royall professorship. As a result of his acceptance the law school at Northampton ceased to exist, and four years later saw the end of the Litchfield school.

As reorganized the faculty was composed of the president of the university and the two law professors, of which Judge Story was the dean. Dating from that period the law school of Harvard University entered upon a career of abundant and well-earned success. Twenty-four students were enrolled the first year, and the number was gradually increased until in 1844-45 there was an average attendance of 140.

In 1831 Mr. Dane gave \$5,000 towards the erection of a building for the law school and offered \$2,000 additional as a loan. This building, which is known as the Dane Hall, or "the Old Law School," was completed in 1832 and enlarged in 1845. Up to the former year the law school had occupied a small building opposite the present one on the site of College House.

Professor Ashmun died in 1833, and was succeeded by Simon Greenleaf, esq., under whose guidance, and that of Judge Story, the law school soon acquired a national fame, and drew students from all the States.

The instruction was given by examinations and lectures, and by expositions, following in general the course of some text-books. The number of exercises in each week was commonly ten or twelve. Moot courts were also held, which were under the direction of the professors. To this was added the use of an excellent law library, containing over 8,600 volumes, which, together with the hall, was the fruit of the fees received from the students. The reading of the students was directed by the professors, who examined into the results of their study and attainments.

From the death of Judge Story, in 1845, until 1870, though a new professorship was established by the corporation in 1856, it cannot be claimed that any special advancement was made, either in the instruction given or in the quality of the students. As to the latter, there was evidently some deterioration, and with respect to the course of study, it was far from being an ideal one; it covered a period of 2 years (though but 18 months' residence was required), but the studies were taught but once in that time, that is, one-half of the course was taught in each of the two years. Which half any student should take first was determined by the accident of his entering in an odd or even year.

President Eliot says of the system that it "was only justified by poverty, and the convenient though unsound theory that there is neither beginning nor end to the law, neither fundamental principles or natural development." When it is known that from 1840 to 1875 the annual catalogue read as follows: That "no examination, nor any particular course of previous study is necessary for admission," the wonder is that the law school accomplished as much as it did.

The Harvard degree of bachelor of laws meant in fact little more than this, that its possessor had been enrolled so many months upon the books of the school. Still these same years are celebrated in the history of the Harvard Law School, because of the high character of its professors and lecturers, among whose names are found, in addition to that of Simon Greenleaf, those of Charles Sumner, Henry Wheaton, Edward Everett, R. H. Dana, jr., and B. R. Curtis.

Even after the advent of the present administration some time elapsed before there was any marked change in this department. The candidate for admission had to be at least 19 years of age and of good moral character, but it was not necessary that he should have pursued some particular course of study. As in the other schools, so here—a regulation still imperative—the student must file a bond with the bursar, in the sum of \$200, signed by two bondsmen, one of whom must be a citizen of the United States, for the payment of dues to the university, or instead, make a deposit with the bursar as security. Upon such conditions as these the students were allowed to matriculate.

Fortunately the march of improvement reached at length the law school, and since then (dating from 1877) the motto of the administration has been to give to each of its graduates a thorough and scientific training. As reorganized its design is to afford such a course of education in English and American law (except in matters of mere local law), that its graduates may practice wherever that system of law prevails, and plead in any of the courts of the United States. The course of instruction adopted by the faculty at the beginning of the academic year 1879-80, is designed to occupy the student 3 full years, and is arranged for persons who have received a college education; but candidates for a degree who are not graduates from colleges will be admitted upon passing a satisfactory examination in the following subjects: (1) In

Latin, an amount equivalent to that required in the entrance examination to Harvard College; (2) in Blackstone's Commentaries, all except the editor's notes. French, or if the faculty consent, some other language, may be substituted for Latin. The June examinations for admission are held in different parts of this country, and in Bonn, Germany, coincident in time and place with those held for admission into other departments of the university. The tuition fee is now \$150 per year, and there are no extra charges.

Since the adoption of the change in its management the amount of instruction has more than doubled, and the entire course of study presented for a degree is taught in each year, the subjects being arranged with reference to their fundamental character.

Every candidate for the ordinary degree is required to take 10 hours a week of lectures and recitations, except in the third year when only 8 hours are required. To such candidates instruction in other departments of the university is also open, and that without additional charge. Moot courts are held each year before one of the professors, and all students of one year's standing have the opportunity of arguing in these cases.

An entirely new system of instruction has been in part substituted for the former method of teaching law by lectures, the chief merit of which lies in the development of the habit of intellectual self-reliance. The text-book used is a collection of cases upon some branch of the law, properly classified and arranged in chronological order. These cases are subjected in the class room to a thorough analysis and comparison by the students, who are made to feel so far as possible that they and the instructors are fellow students engaged in the search after scientific truth. In a word, the same methods are employed as are practiced in active professional life. This new system forms one of the distinctive features of the Harvard Law School.

There are annual and very thorough examinations in writing upon the work of each year, which students must pass satisfactorily as a condition to their receiving the degree of Bachelor of Laws. These examinations are very searching, and quite a large number, amounting to 15 per cent. or more, fail to obtain the degree. The improvement of the course of study has been a subject of grave consideration by the faculty. The establishment of a compulsory 4-years' graded course has been formally recognized as desirable as soon as a proper financial basis can be assured. What this basis should be, or, in other words, what loss the school would be likely to incur from making the change, is a question about which considerable difference of opinion prevails.

That the department, with the help of the Harvard Law School Association, has prospered under the new system is shown by the statistics of attendance. In 1870-71¹ only 134 were enrolled as law students; in

¹ At this time the income for the general purposes of the school was \$8,430.81; income from the Bussey Professorship of Law, \$1,022.62. In 1887-88 the law school received one-fourth the net income from the Bussey estate, \$3,856.54.

1888-89 there were 217, and in 1889-90, 254. Meanwhile the number of students holding collegiate degrees has increased from 49 per cent. to about 80 per cent., a large proportion being Harvard Bachelors of Arts. It is in this respect especially—that is in the number of Harvard graduates—that the school has had a gratifying growth during the last 20 years. The receipts from students' fees during this period has much more than doubled. This school has only eight scholarships.

The law library has always been one of the noted features of this department. In 1848 there were 12,000 volumes. It now has just twice that number, and is believed to be one of the most complete and extensive of all the law libraries of this country. Certainly among libraries belonging to law schools it excels in these respects: (1) In the condition and quality of its books, meaning by quality the edition; (2) in the completeness of its collection of civil and foreign laws; (3) in its working library of duplicates.

Formerly this library was kept in Dane Hall, where all the exercises of the school were conducted, and was open day and evening during the whole academic year; but in 1883 it was removed to the New Law School, which building stands on the site of the Thayer Commons Hall, and faces a little west of south toward Harvard Square. The building is of stone, partly of red sandstone and partly of a light buff-colored Ohio stone, and has a total frontage, including both wings, of 220 feet. The total cost of the building was about \$135,000, and was the gift of Edwin Austin, of Boston, in memory of his brother, the late Samuel Austin, for whom it is named. It is complete in all its arrangements and appointments, and will fully meet the needs of the school for an indefinite time to come.

Finally, the school has in the last few years turned out a distinctly new grade of young lawyers, and the complete transformation in its tone gives promise of yet richer results in the immediate future. The spirit of work and the enthusiasm which now prevail among the law students is without a parallel in the history of any of the departments of the university.

This department of Harvard has maintained its reputation as a national school. While a majority of the students are from New England, all parts of the Union are fully represented. Of late the representation from the Western or Central States has been greatly increased, so that now fully one-fourth of the students come from a point beyond the western boundary of the State of New York.

THE DIVINITY SCHOOL.

From the earliest period of New England history Cambridge appears to have been a favorite resort for candidates for the ministry, who were attracted by the literary spirit of the place and by the unusual advantages which the college library afforded. Yet not until 1805, when the Rev. Henry Ware was elected to the Hollis Professorship of Divinity,

was any attempt made to provide systematic theological instruction. In 1811 Dr. Ware began a course of exercises with the resident students in divinity, and was assisted by President Kirkland in dogmatic theology; by Professor Willard in Hebrew, and two years later by Mr. Andrews Norton in sacred literature. In 1817 Professor Frisbee was added to these instructors in theology as a teacher of ethics, and it was about this time that the Harvard Divinity School first began to be spoken of as a separate institution.

It may be said that the selection of Dr. Ware, who was widely known as a leading Unitarian divine, aroused an animated controversy among the friends of Harvard College. This controversy continued for several years, and so violent was the storm it awoke that more than forty years later the "distinct rolling and reverberation" of it had not wholly died away.

Dr. Ware's election may be best explained as an indication of a change in public opinion, which had silently been going on. The character and manner of preaching, the spirit of investigation, the growing independence of mere authority, all tend to deepen this conviction and show that new theological standards were in process of adoption. It is probable that the choice of Dr. Ware to the theological chair was not good policy. Its immediate effect was the alienation of many influential friends who still held to the sound orthodox views of the fathers; it resulted in the establishment of new colleges and the extension of those that were not suspected of heresy; and, besides, it caused legislative interest in the college to decline. These were disadvantages that could be but poorly counterbalanced by the attachment of the new friends it gained.

In 1813, Samuel Parkman, esq., a wealthy merchant of Boston, conveyed a township of land in the district of Maine "for the support of a Professorship in Theology," to which, in 1840, Rev. Francis Parkman, D. D., son of the donor, added \$5,000.

In 1815, President Kirkland, in behalf of the corporation, and with the assent of the board of overseers, addressed a circular letter to a large number of the graduates and other friends of Harvard, asking their assistance in providing additional means for theological education in the University. In consequence of this letter subscriptions to the amount of \$27,300 were obtained, and at the head of the long list of honored donors was the name of the venerable ex-President John Adams. The subscribers held a meeting July 17, 1816, and formed themselves into a society "for promoting theological education in Harvard University." The credit of this movement, for founding the theological school as a distinctive department, belongs principally to President John Thornton Kirkland, and to the Fellows associated with him.

The trustees of the society, in conjunction with the corporation of the college, soon after laid the foundation of the theological school, and undertook the charge of it by a joint superintendence.

Among the fundamental rules adopted by this society was one which read as follows:

It being understood that every encouragement be given to the serious, impartial, and unbiassed investigation of Christian truth, and that no assent to the peculiarity of any denomination of Christians be required, either of the students, or professors, or instructors.

The declared object of the society was to provide funds for assisting meritorious theological students with limited means to reside at the university for a requisite time. It was organized on the basis of life and annual membership, according to the amount and method of subscription.

The first annual visitation at which dissertations were read by students of the divinity school is believed to have taken place December 17, 1817. In 1819 the theological school was formally organized, with a corps of four professors, who occupied the chairs of the Dexter, Hollis, Hancock, and Alvord Professorships.

Uneasiness, however, existed in the minds of many Unitarians on account of the connection of the school with the university, and it was proposed at first to withdraw the school entirely, but it was finally recommended that the superintendence be committed to the directors of the society.

Accordingly in 1824 a new constitution was adopted and a new board of directors chosen, to whom was intrusted the principal management of the affairs of the school, but subject, of course, to the control of the corporation and overseers of the university. This society was incorporated in 1826, and under its auspices there was erected for the accommodation of the theological students an edifice which received the name of Divinity Hall.

Near the close of Dr. Kirkland's presidency, the Parkman Professorship of Pulpit Eloquence and Pastoral Care was established upon a fund already referred to, to which generous additions had been made by the friends of the college. This was the second professorship which had been established exclusively for the theological school. The first occupant of its chair was the Rev. Henry Ware, jr.

In September, 1830, the directors and the society which they represented resigned all their powers and authority into the hands of the corporation of the college. The school of divinity was therefore reorganized with a faculty consisting of the president of the university as its head, and the three professors, of divinity, of biblical literature, and of pulpit eloquence and pastoral care.

They were clothed with power to make regulations and enforce laws, and one of their number was appointed dean by the corporation. This office was first filled by the Rev. John Gorham Palfrey, who was elected to the professorship of biblical literature.

Upon the organization of the theological faculty the "Society for the Promotion of Theological Education" transferred their funds to the cor-

poration of the college, but on the condition that they should serve only the purposes intended by the several donors and be subject to "the same trusts, charge, and liabilities" as when they were under the control of the society.

At that time the theological battle was at its height and many publications were engrossing the attention of the contestants and their friends. In regard to the university the ground was taken that it was "an institution of common interest, and that for one religious denomination to take possession of it, stamp upon it its own theological character, and turn it to its own account, is doing great injustice to the community at large."

"Harvard College," it was claimed, "is peculiarly and emphatically the institution of the State." Edward Everett said (this was published in *Old and New* in July, 1871) that "the election of President Webber (in 1806) was one of the first occasions on which the present existing divisions of the theological world in Massachusetts disclosed themselves." Still he said of Dr. Ware's election to the divinity professorship in 1805, that—

it contributed even more than that of President Webber to the organization of theological parties which have since prevailed. A growing tendency on the part of some of the New England clergy to escape from Calvinism had existed for two generations, perhaps longer. Dr. Ware was the first professor ever known as an Arminian and an anti-Trinitarian, and his election forms an era in the college.

The status which the divinity school acquired in 1830 it has maintained to the present time. The reciprocal influence of this school and of the college upon one another has always been very slight. The only connection between them, as between any other two departments, is that they are under the general direction of the same board, viz, the corporation. There is (or at least this was true formerly) little association between the theological and other students of the university. Besides, as S. A. Eliot said in 1848, not a dollar given to the college has ever gone to the theological school.

Up to the period just mentioned the influence of the divinity school was unquestionably Unitarian, and this was to be expected, as the donors to its funds were almost without exception members of the Unitarian churches, though some of the officers in the board of instruction and some of the members of the board of overseers had always been Trinitarians. Besides, the claim was made that—

No machinery, no partialities, no methods or efforts of any kind, direct or indirect, are used for sectarian purposes.—Dr. GEO. E. ELLIS.

In 1848 the funds for the support of the divinity school amounted to upwards of \$84,000, and 2 professors had then the charge of the 20 or 30 students. The course extended through 3 years, and the annual cost of tuition was less than \$70.

In 1852 an attempt was made to separate the theological school from the college. A bill in equity was accordingly filed in the supreme

court, in which the corporation prayed to be relieved of the trust of the divinity school. The court decided that they had no power to grant this prayer. An enabling act was therefore passed by the legislature in 1858, but the project of separation was never carried further. It was conceded "that it would be false to all our traditions if in a college named for a Puritan minister, fostered by a Puritan clergy, and bearing on its corporate seal the motto '*Christo et Ecclesiae*,' religion should be the only subject deliberately excluded."

In the *Unitarian Review* for March, 1887, Professor C. C. Everett, the dean of the Harvard divinity school, traces briefly its history, and it is from his article that the greater part of the following sketch is taken:

The history of the Harvard divinity school is in one respect very different from that of the other departments of the university. They began with small classes, and the classes gradually increased, though not without fluctuations. The first college class, for example, numbered 9; the present senior class (1887) numbers 239.

The divinity school began also with small classes, but here the resemblance ceases. The classes did not grow larger. The average at one period of its history is not very different from that at another. Within the narrow limits that the number of students allows, there have been, indeed, great variations. These have been sudden and apparently capricious. Only twice did the number of a graduating class reach 14, several times 13, but the average has been much less than that, and a class of 14 would perhaps be preceded or succeeded by a class of 3.

The reason for this lack of increase in the matter of numbers suggests interesting questions. Perhaps the cause may be found, to some extent, in the fact that the Unitarian body, with which the school has been closely connected, has been in a like manner comparatively stationary in the matter of numbers. The relation between the school and the denomination can not, however, have been one merely of demand and supply, for this denomination has often felt sorely the need of preachers. A deeper explanation is found in the fact that, unfortunately, the Unitarian body has not produced so many ministers as it has needed.¹

However little change there has been in the numbers of the school, there have been great changes in its internal economy. The kind of men, the grade of their culture, their previous history—these have been very different at different periods of the history of the school. For the first 6 years, beginning with 1817, it had no students who were not graduates of Harvard. In 1823 appears a student from Brown. For 5 years, 1 graduate of Brown stands every year by the side of Harvard men. Next in importance to Brown, so far as the supply of students in the earlier days of the school is concerned, stands Bowdoin. In the thirteenth year of its history is the first graduate who has not a college degree. The number of men who are not college graduates increases as the years pass, until we reach a period when the college men are in a great minority.² In process of time, also, the number of colleges represented in the divinity school is greater in proportion to the number of students than that in any other branch of the university. These colleges are some of them in States not dreamed of when the school was founded.

In 1859 the school was larger than it had been before or than it has been since. It

¹ May not the reason of this be partly sought for in the fact that the ministry does not now offer the career that it did in the early part of the century?

² In 1850 two-thirds of the students in Cambridge were bachelors of arts, while in 1870 less than one-fourth had taken their bachelor's degree.—President Eliot's Report, 1870-71.

numbered in all 36. In this number there were only 6 who had college degrees. This temporary increase was the result of a very peculiar history. Rev. George H. Hepworth, then a clergyman in Boston, had felt the need of bringing more men into the Unitarian ministry. The field was white for the harvest, but the laborers were few. He undertook to establish a divinity school in Boston. It was without endowment and without buildings. The Unitarian clergymen of Boston lent their aid. The various departments of study were distributed among them. Surely, so far as the teaching force was concerned, the school was strong. Circulars had been scattered broadcast over the land. The students were to support themselves by work. There was either no entrance examination or a very slight one. Neither money or training was required. A goodly number of men responded to the call. I hope that some time the whole inner history of this movement will be written. At present I have only to do with its outcome. The school proved a troublesome thing to manage, and the Harvard divinity school was urged to take the students off its hands.

This was a critical moment for the Harvard school. Its requisites for admission had not been high. To receive these students, it would have, substantially, to give up all requirements for admission. This it decided to do. The bars were taken down, and almost anyone whose character seemed good might enter.

It was in the year after this change took place that my connection with the school as a teacher began. Whatever may be thought of the policy of the step just taken, the result was certainly, for the time, most interesting. These men who had come without special intellectual preparation were hungry and thirsty for knowledge. They were thoroughly in earnest. Some of them were very hard workers. They received most gladly such help as could be given them. The more sharply a sermon might be criticised, for instance, the happier and the more grateful did the man appear. He felt that he was getting what he came for. I never knew such progress as some of these men made. Indeed, taking it all together, though there were some failures, the experiment had all the success possible to it. If we look over the list of the men who were in the school at that time, taking those who had left a brilliant record in college, those whose education was beginning, and those who in the matter of culture stood between the two, rarely has the school done better work. Rarely have there been more men in its walls at one time whose names were to become familiar to the churches; rarely, more whose less-known work was to be more earnest and successful. The next year, so far as regular students were concerned, the former requirements for admission were restored. These, however, were not high; and for some time the standard of scholarship of most of the students was low.

I have said that the experiment had all the success that was possible to it. It may be asked, why, then, could the school not continue indefinitely in the same line of work? One reason was obvious to any who knew anything in regard to the relation of the school to the university. At this distance of time, the truth may be spoken with all openness. The school had lost caste in the university. It was considered a place which anyone could enter, and where anyone who entered could receive from the beneficiary funds aid sufficient to cover all his expenses. What in the college is a scholarship, to be striven for, here was believed to be freely given to whoever might need.

This picture was hardly overdrawn. Lest I should seem to criticise the management of the school, I will say that the step was taken at the urgency of some of the most venerated among the clergy.

Experience soon taught, however, that, in spite of the success that had attended the experiment of opening the doors of the school to persons whose preparation had been slight, the success had been won at too great a cost. * * * A divinity school that is connected with a university has a special function. It should win the respect of the students of the university, so that it should itself serve in some degree to make attractive the profession which it represents; and its methods should

be specially adapted to the needs of students who should come to it from the college. * * * It is obvious that, whatever circumstances may have temporarily seemed to justify its course, the Harvard school, at the time to which I have referred, was not performing its special work as a university school. So long as a divinity school is regarded by a brilliant student of the college as a valley of humiliation, through which he must pass before he can reach the delectable mountains of the profession to which he aspires; so long as his college friends, who do not see the delectable mountains, see only the humiliation—so long it is obvious that this school is not fulfilling the duty that has been assigned to it.

I have dwelt upon these facts to justify the course which has been taken in the later development of the school, and which by some has been regarded as extreme. The fact was recognized that it must, so far as it was possible, regain for itself its rightful position in the university.

At the moment when the requirements of the school were at the lowest, and as a set-off to this state of things, the degree of bachelor of divinity was established. The requirements for this were very modest. By an examination somewhat more extended than that for graduation, the student could obtain this degree. There were thus two methods of graduation—one with a degree and the other without. The requirements for this degree were gradually increased. The first step in the upward course of the school was taken when only one form of graduation was recognized; namely, by the degree. Students for a time could still enter without examination, but those who did this were ranked as special students.

The next upward step was in the matter of pecuniary aid. The principle was established that no student who did not obtain in his examinations a mark of at least 75 per cent. could obtain such help. The final step was taken when, in 1882, it was decided that no student should be admitted as a candidate for the degree of B.D. who had not a collegiate education or its equivalent. The object was to make the degree of B.D. practically a post-graduate degree. The word "equivalent" was added to meet such a case as that of one who had studied abroad, and thus had not a college degree. It has been interpreted very strictly; and, in fact, no students not college graduates have since that time graduated from the school. Special students are still admitted; but, of these, an examination is required similar to that which was before undergone by those entering the school for candidates for the degree. By these changes, it need hardly be said, the school has suffered some inconvenience. Some young men of promise have perhaps been excluded. The names of students which would have graced the list of graduates have found no place in it. The gain of the school has been, however, so vast that these disadvantages may well be overlooked in the comparison.

Another change which looked in the same direction was received with regret by many friends of the school. It was formerly the custom of the school to have its special day of graduation. All the graduates had parts, and it was very pleasant for the older graduates and other friends to have the new men pass thus in review before them. This habit was as advantageous to the students as it was pleasant to those who were interested in their success. According to the later arrangement the college commencement has become the university commencement, the law school and the divinity school being represented. The necessity which was felt that the school should maintain its position as a recognized member of the university justified this step. I have no doubt that the brilliant series of orations given on these occasions, by the graduates of the school, have done much to place it in its proper light, and to win for it due recognition.

By the methods that have been described, and by means of other influences coöperating with these, I think it is safe to say that the prejudice against the school in the university has wholly disappeared. In the academic year 1883-84 the president could say in his report that "the quality of the students of this school has been so much improved that they now constitute the most highly educated body of pro-

fessional students connected with the university, and are distinguished for capacity, enthusiasm, and devotion to duty." Some of the courses in the school have been accepted for the degree of A. B., so that nearly all the members of the divinity faculty are also members of the college faculty. The present year something more than 130 college students take to some extent courses which are primarily those of the divinity school. When the smallness of the number of its students is considered it is well to remember how many young men come to some extent under the influence of its teaching.

As the school at one time, though yielding temporarily to pressing needs, suffered in its reputation in the university circles, as holding its standard of scholarship too low, so, at one time, it caused uneasiness to the government of the university on account of its denominational position. Its constitution prescribes that "no assent to the peculiarities of any denomination of Christians shall be required, either of the instructors or students." Till recently, however, it has been regarded as distinctively Unitarian. * * * But, as the college began to take its position as an unsectarian institution, it seemed a hindrance in its course that a Unitarian divinity school should be attached to it. It was felt that, in the public estimate, the school would give a denominational aspect to the whole university. At one time a movement was started to separate the school from the university. This movement was a serviceable one in bringing together a mass of material relating to the history of the school, and the nature of the benefactions which it has received, that perhaps otherwise would not now exist in so accessible a form. This movement was, happily for both parties, abandoned. * * *

In 1878-79 a movement was made for a further endowment of the school, the sum of \$130,000 being asked for. A part of its funds were by the will of the donor required to be perpetually invested in buildings on certain real estate in Boston. The rents of these buildings had so fallen off that the loss was seriously felt, and the movement above referred to was to meet the deficiency thus caused. For obvious reasons, the appeal could be made only to Unitarians. It is easy to see that, if an appeal was thus made, without explanation or qualification, to the Unitarians of the country to raise so large a sum for the divinity school, the school would, by this act, be inextricably bound within denominational limits. President Eliot felt the difficulty, and with great wisdom and boldness provided against it. At a meeting held in the First Church in Boston, to make arrangements for raising the money needed, President Eliot used the following language:

"The Harvard Divinity School is not distinctively Unitarian either by its constitution or by the intention of its founders. The doctrines of the unsectarian sect, called in this century Unitarian, are indeed entitled to respectful exposition in the school so long as it exists, simply because the school was founded, and, for two generations at least, has been supported by Unitarians. But the government of the university can not undertake to appoint none but Unitarian teachers, or to grant any peculiar favors to Unitarian students. They can not, because the founders of the school, themselves Unitarians, imposed upon the university the following fundamental rule for its administration: That every encouragement shall be given to the serious, impartial, and unbiassed investigation of Christian truth, and that no assent to peculiarities of any denomination of Christians shall be required either of the instructors or students."

* * * * *

The new policy of the school—which was, in fact, simply a return to its original constitution—was heartily indorsed by Unitarians. As a result of this policy, there are now in the faculty of the school three professors who are Unitarians, two who are Baptists, and one who is Orthodox Congregationalist.¹ Of the faculty as thus

¹Of the eleven clergymen composing the visiting committee of this school five are Unitarians, one is an Episcopalian, three are Orthodox Congregationalists, and two are Baptists.

constituted, the president, in the report from which I have already quoted, says: "There is no more harmonious faculty in the university, and none more completely devoted to the unbiassed search for truth." * * *

With regard to the religious preferences of those who have graduated in recent years from the college, a table of statistics prepared for the 7 years from 1868 to 1875, showed that while the Unitarians had the largest representation of any denomination, they were by no means in the majority, that they had in fact less than one-third of the whole number.

Up to the present year (1887), in which the number of students is exceptionally small, namely, only twenty,¹ the attendance at the school during these last years has increased. The number of students from the year 1872-73 to 1878-79 inclusive, year by year, was as follows: 20, 22, 20, 19, 23, 21, 23; from the year 1879-80 to 1885-86, it was: 23, 23, 29, 27, 21, 26, 25. This is especially gratifying, as the requirements of the school have been so much raised during these later years.

Here it should be remarked that the present method of the school leaves it open to much misapprehension in the matter of numbers. The students who are enrolled in the classes are sometimes counted and regarded as if they were the only students, in the strict sense of the word. The special students and the resident graduates are frequently not counted. The special students are, in general, as truly "regular" as the others. They are, like them, preparing for the ministry, and taking, in general, a full course of study. A few years ago they would have been reckoned as regular students. The difference is that the men in the classes have college degrees, while the special students, for the most part, have not.

However happily the present arrangement may be working at present, there are some who fear that the school is simply standing upon the upper slope of an inclined plane, and that it may some time slide wholly away from its Unitarian traditions; but, with the exception of the Hancock and Hollis professorships, which were founded before the school was established, the endowment of the school has been made by Unitarians.

And as the president well says in his report of 1883-84:

In view of the great change in the constitution of the faculty and the denominational relations of the school since 1879, the dean calls attention to the understanding which was practically entered into with the subscribers to the new endowment of 1879, namely, that Unitarian doctrines would always be entitled to respectful exposition in the school, and to properly expound these doctrines, at least two professors would always be needed, one of whom should be a professor of theology. Since the endowment of the school has all been provided by Unitarians, these propositions seem eminently reasonable; and it is difficult to imagine circumstances in which they could fail to be carried out by the corporation and overseers, unless, indeed, the Unitarian denomination should die without offspring or designated heirs, or should cease to furnish scholars competent to present its own doctrines in professional chairs.

Let us now consider what the school offers to students of various denominational connections who may resort to it. We will ask, first, what it offers to a young man who wishes to prepare himself for the Unitarian ministry. It offers, and will always continue to offer, theological teaching from the Unitarian point of view. It offers teaching in other departments of theological study by instructors, some of them Unitarian, and others selected for their learning or other special fitness for such a position outside the narrow limits of any one denomination. If it be asked whether he will not sometimes receive contradictory teachings from different professors, it must be admitted that he probably will. The teacher of theology, for instance, may draw from

¹In 1887-88 the senior class numbered only three students, and but two received the degree of B. D. In this year the divinity school enjoyed for the first time the use of the new library building.

some texts of Scripture a meaning different from that which is drawn by some orthodox teacher of exegesis. I think Unitarians in general will agree that this will do him no harm. The Unitarian idea, as I understand it, is to lead men to think for themselves. * * *

Really, however, such a collision of teaching is probably not so frequent as might be supposed. The professors in a theological school at the present day have something very much more important to do than to accentuate sectarian differences. The interpretation of the New Testament is coming more and more to be a matter of science. * * *

We have seen what the school offers to Unitarian students. We may now consider what it offers to students of the orthodox faith. This is somewhat less, it must be granted. It offers them, however, professors of whose advice and denominational sympathy they may be sure. The fact that theology is taught by a Unitarian is less hostile to their thought than might be believed; for the treatment of theology has largely to do with fundamental matters, and, though questions in regard to which the denominations differ are treated frankly and freely, these form but a small portion of the whole matter of the course, and, in regard to these, references are given to authors of various views.

It may be well to add a few words as to the inner life of the school. Forty hours of class work a week are offered, namely, in matters connected with the Old Testament, 12; the New Testament, 9; church history, 8; comparative religion, 2; ethics, 2; theology, 5; homiletics, 2. Besides, there are instruction in elocution and opportunities for debate and similar exercises. In the department of the Old Testament and in that of the New are also extra exercises, called by the name of "Seminary," in which the students meet at the professors' houses. Essays are read, and questions concerning the matters studied are freely discussed. The courses most largely attended by students of the college are those on ethics and church history. Several other courses are similarly attended, though in less numbers. The course on ethics is largely practical. Institutions of charity and reform are visited by the students, reports are made, and the methods of conducting such enterprises discussed. College courses are also open to regular students and resident graduates.

It is obvious that all the courses offered by the school cannot be required for the degree. No questions have ever divided the faculty so much as those growing out of this fact: Shall any studies be especially required? If so, what? Each member of the faculty had his plan, only two, if I remember rightly, being perfectly in accord. These urged that the matter should be left to the election of the students. This plan was finally adopted, the only restriction being that no department should be neglected. In addition to the studies of the school should be named its religious exercises. There are the morning prayers, conducted by students and professors in turn, the conference meetings, and the preaching by students on Friday evenings.

Of the temper and spirit of the school, of its religious interests, of the character, scholarship, and promise of the students at present connected with it, I can say that there was never a time, so far as I know, when a better report could be given. The general religious interest would seem to have deepened as the standard of scholarship has been raised. While there is as much freedom and breadth of thought as ever, there is a general disposition to emphasize what is positive rather than that which is negative in theological matters.

The school is to be congratulated that the college, in appointing Professor Peabody to be the Plummer professor, did not take him from the school, but only enlarged his influence, thus furnishing a new and extremely interesting connection between the divinity school and the college.

The generous subscription, completed last year, for a building that should contain fireproof accommodations for books, a reading room, and lecture rooms is a fresh instance of the interest with which the school is regarded by its friends, and will furnish that protection for the valuable library which has long been imperatively needed.

When we consider all the money that has been given to found and support this institution, and all the labor that has been expended for it, and then look at the smallness of the number of its students all these years, and to-day also, when the other departments of the university have so increased, it might be doubted whether an adequate return for all had been received. A glance over the catalogue of its graduates would show a few names any one of which might almost serve as a justification of all that has been done. If the work of all its graduates, known to the world or unknown, could be reckoned, we should be surprised at the result; but the past and the present are not all. I believe that there is a large future for the school. Its breadth, its openness to the best thought, the most profound scholarship, and the most earnest life, under whatever name these may be found, will receive recognition at some day, if not in ours. The world is slowly coming round to the position which the Harvard divinity school has taken somewhat in advance; and with all the advantages which its connection with the oldest and largest university of our land can give it, I believe that all the costly preparations which have been made to fit it for its work will be found not to have been too great.

During President Eliot's administration two professorships have been added and the amount of instruction in this department has quite doubled. In 1879-80 a fund of \$140,000 was raised by subscription, which has placed the school on a firm financial foundation. A new building was erected in 1886, and 6 professors and 2 assistants now constitute the teaching force. The library of the divinity school consists of over 20,000 volumes and 2,400 pamphlets. The divinity students have access also to the college library. All meritorious students have the aid of scholarships and aid from other sources amounting to from \$150 to \$350, which enables them to meet all necessary expenses. And for the present year (1889-90) two fellowships of \$500 each are offered to the graduates of this or any other theological school who purpose to enter the Christian ministry. These fellowships are intended to encourage advanced theological work of a high order. The university catalogue of 1889-90 shows a gain in attendance in this department of over 33 per cent. This increase may be accidental, or it may be a legitimate result of the enlargement of the faculty and the improvement of the equipment of the school at all points. It is not impossible that genuine university training for the profession of the minister is gaining favor.

Thus it will be seen that the divinity school has felt the impulse given to all departments of the university, and though its progress during the two decades just past has not been as rapid as its friends hoped to see, its condition has vastly improved and the advantages it now offers for a superior theological training are unsurpassed.

THE UNIVERSITY CHAPEL.

On May 10, 1886, a vote was passed by the president and fellows—

That five preachers to the university be annually appointed by the president and fellows, with the concurrence of the board of overseers, who, in conjunction with the Plummer professor of Christian morals shall arrange and conduct the religious services of the university.

The board of overseers concurred in this vote on May 12, 1886.

On June 14, 1886, on the unanimous recommendation of the preachers and the Plummer professor, the President and Fellows voted—

That the statute numbered 15, concerning religious services, be amended by striking out the clause “at which the attendance of the students is required,”

and on June 16 the board of overseers concurred in this vote. Attendance at the religious services of the university was thus, by the advice of those who conduct these services, and to the satisfaction of all concerned in them, made wholly voluntary. It is now four years since the rule was passed, doing away with all compulsory attendance on religious services, and there seems to be no desire among the faculty or the students to return to the old practice. The average attendance at morning prayers this year is upwards of 200, and the men who do go attend because they wish to. The service is a reverent and delightful one. The college preachers take their turns in leading, as well as in conducting, the Sunday evening service.

The Plummer Professor and the preachers to the university have directed these services as follows: Each has conducted daily morning prayers for about seven weeks, and each has preached on four Sunday evenings. Sixteen vesper services have been held on Thursday afternoons from November till May. The preacher conducting morning prayers is in attendance every morning during his term of duty at Wadsworth House 1, for the purpose of meeting students who wish to consult him.

Other services on Sunday evenings have been led by some of the most distinguished of American clergymen.

On five Sunday evenings, beginning December 11, 1887, services were held in the Globe Theater, Boston, conducted by the preachers of the board, but arranged in every detail by a large body of students. Admission was by ticket, and tickets were carefully distributed each week among the homes and workrooms of the poor. A series of meetings has been held this year, arranged by students, and called College Conference Meetings. They were designed to deal with practical problems of the moral and religious life as they appear from time to time in college, and it was their purpose to unite in a common enterprise all who cared for the higher interests of the university. The subjects and speakers have been as follows:

November 15, Rev. Phillips Brooks, D. D., College Responsibility; December 12, Rev. J. G. Brooks, of Brockton, The Relation of Young Men to Charity; January 23, President Eliot, College Public Opinion; April 17, Rev. Professor W. J. Tucker, of Andover, The Recovery of Religious Enthusiasm; May 15, Rev. Professor Francis G. Peabody, College Standards of Duty.

Such movements as have been alluded to above are proof that the present tendencies of the religious life at Harvard are hopeful and healthful. Scores of Harvard graduates have had a noble part in carrying on the work of evangelical Christianity, and it is by no means a necessary outcome of a course of study at Cambridge that a man should lose or weaken his faith.

In addition to the opportunities for worship in Appleton Chapel, seats are provided for students, at the expense of the college, in the churches of the different denominations in Cambridge. St. John's Memorial Chapel of the Episcopal Theological School having been erected for the especial accommodation of Harvard students is free to them.

To aid in the support of these various services the bequest of Increase Sumner Wheeler (A. B. 1826) was received in April, 1889. It establishes a fund of \$50,000, the income of which, or so much of it as the President and Fellows shall deem requisite, is to be applied "to the support of religious worship on Sundays and other days."

THE EPISCOPAL THEOLOGICAL SCHOOL.¹

[By Rev. George Zabriskie Gray, D. D.]

In 1836 some clergymen and laymen of the Episcopal Church in Boston and vicinity considered the establishment in Cambridge of a theological seminary; not only that there might be an institution for the training of clergymen nearer than New York City, but also that the advantages of such a literary center might be availed of for the purpose. But the undertaking was dropped, for various reasons, and the only results at the time were the preparation of a plan for a seminary, and a small legacy given by a lady towards the scheme. In 1867 the late Benjamin T. Reed, of Boston, revived the idea, and gave \$100,000 to five trustees whom he appointed, and by whom a charter was secured, under the title of "The Episcopal Theological School." They soon engaged four professors, and hired two dwelling houses on Mount Auburn street, and the school at once began operations in a modest way, with a few students. Great expectations were not indulged in, for it was only anticipated that a small number would resort to the institution, as several other seminaries had been founded in the Episcopal Church—among others an excellent one at Middletown, Conn.—since the original project in 1836.

But generous friends soon began to take an interest in the undertaking, and liberal gifts flowed in. Not only were considerable sums of money contributed towards rendering the income adequate to the expenses, but, in succession, there were built St. John's Memorial Chapel by the late Robert Means Mason, Lawrence Hall by Amos A. Lawrence, Reed Hall by the founder, and recently there has been added Burnham Hall, the refectory, by John A. Burnham. In this way the trustees, without any expenditure of their funds, found themselves in possession of a collection of buildings which have peculiar beauty, and the rare advantage of uniformity in style, having been completed according to the original designs of the architects, Ware & Van Brunt, of Boston. The appointments of the buildings are unusually complete and tasteful. The lecture

¹ The Faculty of the Episcopal Theological School was formerly published in the Harvard Catalogue, but it never had an intimate relation to the University, and now has none whatever.

rooms are commodious and cheerful. In Lawrence Hall each student has a bedroom and sitting room, which afford a comfortable home during his sojourn in the school.

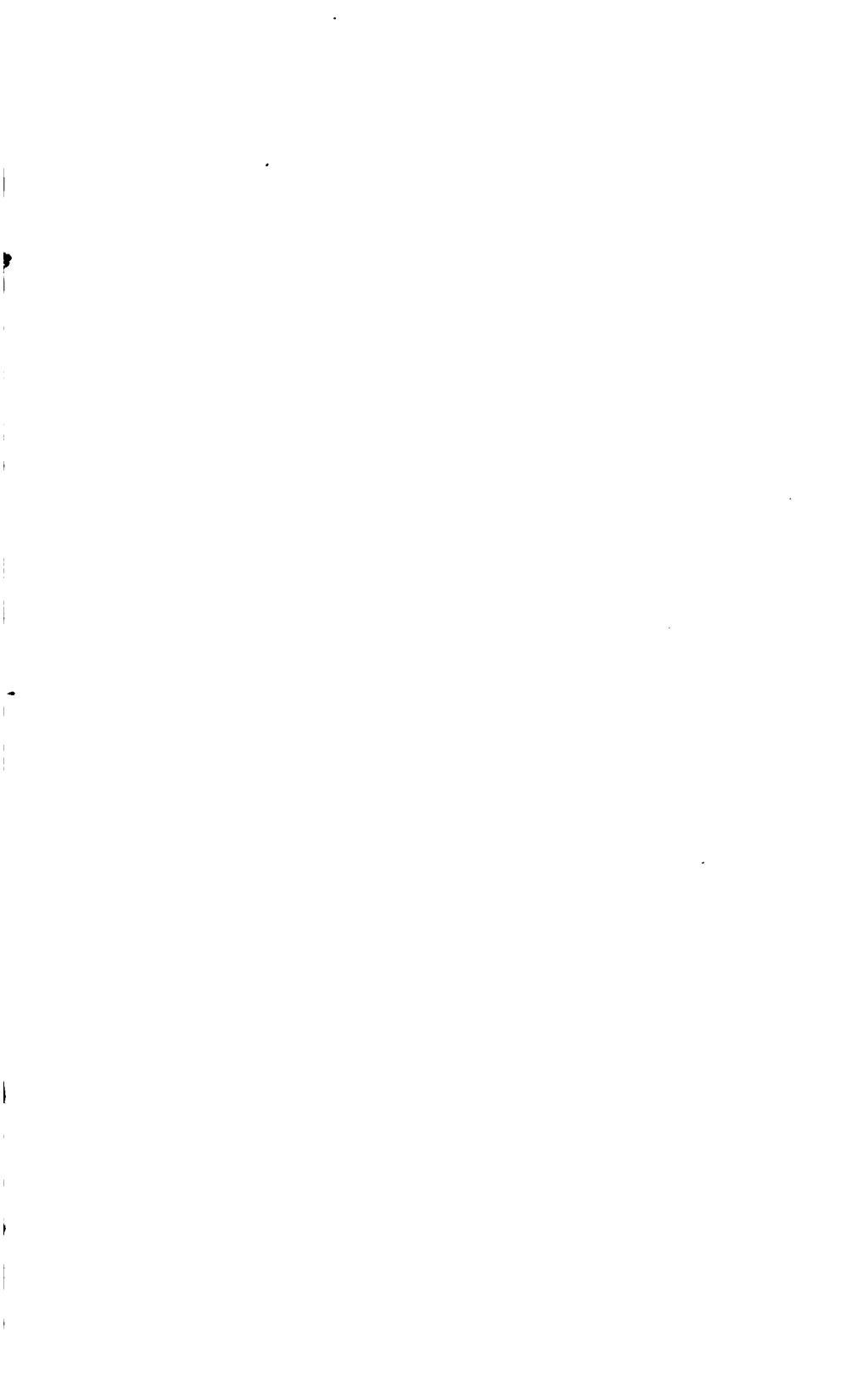
In 1874 the founder, Mr. Reed, died; and it was discovered that his interest in the school, and his gratification at the success of his project, had induced him to leave the reversion of his large estate to the trustees. This at once placed the future of the school upon an assured basis, and will in due time render it financially one of the strongest seminaries in the land. With this growth in material prosperity, the number of students has increased, until now there are 22 men on the roll. This is more than the dormitory can accommodate, which has been outgrown sooner than was expected, but which will soon be enlarged so as to contain rooms for 40. There have been 42 graduates, all of whom are in active work, except one who is in ill-health. This record is indicative of the character of the students, and of their preparation for their calling. The school has on its staff at present five professors; but the full scheme will require six, for the chairs of Hebrew and Old Testament study; Greek and New Testament study; church history; systematic theology; liturgies, evidences, etc.; homiletics and pastoral care.

For admission, there are required evidences of proper religious character and of fitness for the ministry, and, if the applicant is not a bachelor of arts, an examination in mental and moral science, history, rhetoric, Greek, and Latin. This examination is regulated by such a standard as will insure that the student can follow the course of study, which is advanced and thorough. The curriculum embraces 3 years; and, at the close, the degree of bachelor in divinity will be hereafter granted to those who sustain a prescribed examination, and write assigned theses. All others who have satisfactorily passed through the course receive a certificate to that effect, and are enrolled among the alumni. About one-half of the students have been graduates of Harvard, with which the relations have ever been most pleasant; that great university having always extended friendly courtesies to this sister institution of learning, which, though entirely separate from it, yet derives undeniable advantages from its proximity.

Besides the board of trustees, in whom the property is vested, there is a board of visitors, composed of 3 clergymen and 3 laymen, with the bishop of the diocese as *ex-officio* president, who exercise supervision over the working of the school, and secure conformity to its aims.

The relation of St. John's Memorial Chapel has already been referred to in the Harvard Register, as having been erected primarily for Harvard students, as a free place of worship for them. Other attendants upon the services are entitled to accommodation in so far as members of the university do not require the seats.

It is hoped that in coming years the school may, by both the numbers and the efficiency of the men whom it sends into the ministry, justify the expectations of the friends who have so generously contributed to its establishment.—(In Harvard Register, February, 1880.)





HARVARD COLLEGE—DIVINITY LIBRARY.



HARVARD COLLEGE—DIVINITY HALL.

CHAPTER VI.

REQUIREMENTS FOR ADMISSION.

As we have seen in the first chapter of this history, it was necessary from the earliest times for students who sought admission to the college to pass an examination. This continued for two centuries to be mostly oral, and was "neither searching nor extensive." Later, as the practice of speaking Latin fell into desuetude, the amount of Latin and Greek required to be read was greatly increased, and the examinations became more thorough and rigorous. Mathematics was first made a requisite for admission in 1803, and then only so much as related to the rudiments of arithmetic. Geography was added in 1807. In 1816 an examination was required in the whole of arithmetic, and to this was added in 1819 a trifling amount of algebra. Cæsar was first required for admission in 1836-37. From that year until the year 1866-67, there were only very slight changes in the requisitions for admission to Harvard College. Harvard adopted admission examinations in English in 1874. Since that time these examinations have been adopted by all the New England colleges but one, and by many in other parts of the country. Examinations in French and German were adopted in 1875, and in 1877 these languages were put among the advanced subjects, on an equal footing with Latin, Greek, and mathematics. That the examinations were rigorously conducted during the 7 years preceding 1877¹ is shown by the fact, that out of 1,847 candidates for admission, 255 or nearly 14 per cent. were rejected. A new plan was introduced in 1886-87. But the entrance examination is only the first of a series of ordeals by which the undergraduate is tested before he is permitted to go forth as an alumnus of the college.² During the 4 years preceding 1878, 28 seniors failed to obtain a degree, and 6 juniors, 16 sophomores, and 51 freshmen were relegated to the class below, while 681 other students were conditioned and required to pass a second examination in one or more studies. This is a higher per cent. of failures and conditions than is found in more recent years, but the requirements are so rigorously adhered to that the percentage is still large.

¹ For a history of the entrance examinations during the 40 years preceding 1877, see President Eliot's report for the latter year.

² In 1880 to obtain admission to the college the candidate had prescribed for him "a minimum requisition in every study and a maximum requisition in two selected by him from four principal studies." In all he was required to pass a satisfactory examination in eleven subjects.

In the *Popular Science Monthly* for December, 1886, Prof. Josiah Parsons Cooke thus deals with the question of the new requirements for admission to the college, which were first published in that year, and were to go into effect at the entrance examinations of 1887.

The scheme, he says, was originally prepared by a large committee of the college faculty, and was discussed in all its details for more than 3 years, first by the faculty and afterward by the corporation and the board of overseers, and then adopted by all the governing boards of the college.

While the new plan permits and even encourages the old line of linguistic studies, it opens other avenues of admission, and among these one which demands and invites a thorough preparation in mathematics and physical science, with only that minimum of linguistic training which is universally regarded as an essential requisite of liberal culture. The examinations embrace two classes of studies, elementary and advanced. The elementary studies are not supposed to be equivalent to one another, and they do not all have the same weight in the examinations. Greek, Latin, and mathematics have, as heretofore, much greater weight than any of the others.

In the new scheme students are admitted to Harvard College as candidates for the bachelor of arts degree (in accordance with the first of their examinations), who can write correctly a short English composition, and thus show that they are acquainted with a few prescribed classical English works; who can read at sight simple Latin, German, and French prose; who have a general knowledge of the history of the United States and of England; who have mastered the elementary mathematics, including analytical geometry, and the rudiments of mechanics; and lastly, who have had a certain amount of laboratory practice in physical science, including both physics and chemistry.

Of the several alternatives which the new scheme offers the one above described is the one that will probably be chosen by most students who are seeking a scientific rather than a literary education. But this general plan of preparatory studies may be varied in details to meet different circumstances; thus an advanced course in Latin or French may be offered in place of the German, but this substitution is not generally advisable, for the study of German, if deferred, must be taken up in college, the ability to read ordinary German as well as French prose being an essential qualification for the A. B. degree. In 1888 81 students took the advanced examination in German and 43 that in French, and as Harvard draws her students from at least 250 institutions, the fact that so many men take the examinations is an indication of the extent of the higher study of the modern languages among the preparatory schools.

The advanced studies are supposed to be equivalent in regard to time spent upon them at school, and will have the same weight in the examinations. Each of the advanced studies is taught in college in an elect-

ive course (or two half-courses) occupying 3 hours a week for a year, and the standard required at the entrance examinations is the same as in the corresponding college courses.

A candidate may therefore satisfy the requirements for admission by presenting himself for examination—

(a) On all the elementary studies, and on at least two of the advanced studies.

(b) On all the elementary studies with the exception of either German or French, and on at least three of the advanced studies.

(c) On all the elementary studies with the exception of either Greek or Latin, and on at least four advanced studies.

(d) On all the elementary studies with the exception of either Greek or Latin, and of either French or German, and on at least five advanced studies. A candidate may be admitted in spite of deficiencies in some of these studies, but no candidate so admitted will be recommended for the degree until he has made good such deficiencies to the satisfaction of the faculty.

This broadening of the requisites for admission is the last step in a series of changes by which at Harvard College scientific culture has been placed on the same footing as literary culture, and recognized as an equally fitting preparation for the degrees in arts. It has been clearly seen by those who have advocated these changes that the study of natural science could not compete with the study of literature as a means of culture unless the discipline were equally severe, and unless legitimate scientific methods were strictly followed. We can not reach a standard that will command general respect until we can secure real science training in the preparatory schools. What we require is that the eye should be trained to observe, the hand to experiment, and the judgment to reason. Hence it is that in the new scheme of requirements for admission to Harvard College the requisition in chemistry has been stated thus:

A course of at least sixty experiments in general chemistry, actually performed at school by the pupil.

The candidate is required to pass both a written and laboratory examination.

The written examination will be directed to testing the candidate's knowledge of experiments and experimenting, as well as his knowledge of the principles and results of the respective sciences. The laboratory examination will be directed to testing his skill in experimenting. At the hour of the written examination the candidate will be required to hand in the original notebook in which he recorded the steps and results of the experiments which he performed at school, and this notebook must bear the indorsement of his teacher certifying that the notes are a true record of the pupil's work.

The requisition in physics is stated in similar language.

Except to those who have unusual mathematical and scientific talent the new scheme of preliminary studies is a decidedly more difficult way of entering college than by the old classical curriculum. It has, how-

ever, a special end in view, and has been adapted to this purpose with great care, and is the result of large experience. Our colleges have always been the nurseries of scholars, of men who knew how "to clothe thought in beautiful and suggestive language." Harvard College hopes to render still as high service to the State in these respects, and at the same time do the equally important work of preparing men "to unravel the mysteries of the universe, to probe the secrets of disease, to direct the forces of nature, and to develop the resources of this earth."

Two regular examinations for admission to the freshman class are held each year. The first in June at stated places in this country and in Europe, and the second at Cambridge alone, at the beginning of the academic year in the autumn. These permit the candidate to pass an examination on a part of the regular branches for examination one year, and on the remainder a subsequent year. But the candidate so presenting himself must pass a satisfactory examination in at least five of the prescribed subjects.

In 1889 the number examined for admission was larger than in any previous year, the total being about 700, of whom 323 entered college in the autumn, and the remainder were hoping to enter in 1890. Candidates for the scientific school were not included in this count.

In addition to the examinations required for admission to the college, optional examinations are provided for such candidates as have extended their studies beyond the requirements. At these examinations a higher standard of proficiency is demanded than at the examinations for admission.

Thus candidates for admission to the freshman class may pass upon the prescribed studies of the sophomore and junior years, and thereby relieve themselves from attendance at the exercises in those studies in college.

A principal aim in providing these optional examinations is to encourage teachers to carry the studies of their brighter and more diligent pupils beyond the bare requirements for admission in whatever direction taste or opportunity may suggest. Full employment may thus be secured for the most capable student until he is thought mature enough to enter college, while his greater progress in school will make his college course more profitable by enabling him either to take up his studies at a more advanced stage, or to give more time to the studies of his choice.

Harvard College also admits without examination special students, who may be candidates for a certificate and enjoy equal advantage for taking honors.

The courses of study in Harvard College are open to persons who satisfy the faculty of their fitness to pursue the particular courses they elect, although they have not passed the usual examination for admission to college. These students are known as special students; they are members of the college from the time of their admission, but are not candidates for the degree of bachelor of arts.

For some time President Eliot and his associates have felt that the age at which young men are now graduated from Harvard College is too

advanced. Hence, as early as December, 1887, the following vote was passed by the academic council, viz:

That with a view to lower the average age at which bachelors of arts of Harvard College can enter the professional schools and the graduate department, the college faculty be requested to consider the expediency of a reduction of the college course.

The question proposed by the council was discussed at some length, but the faculty found it impossible to secure sufficient time from routine business to give it the consideration which its importance demands, so that no definite conclusion was reached.

COURSES OF INSTRUCTION.

[Taken from the Harvard Catalogue of 1888-89.]

SEMITIC LANGUAGES.

Hebrew—(First course) Grammar; method and manual; elements of Hebrew, parts of the Pentateuch, historical books and psalms; (second course) syntax—parts of the prophets, and poetical books.

Classical Aramaic (Syriac)—Grammars, chrestomathy, New Testament.

Jewish Aramaic—Selections from the Targams, and from Daniel and Ezra.

Assyrian—Assyrian Manual, Delitzsch's, *Assyrische Lesestücke*.

Assyrian (second course)—The cuneiform inscriptions of Western Asia.

Assyrian (third course)—The cuneiform inscriptions of Western Asia.

Babylonian-Assyrian "history," with comparison of the Greek and Roman writers.

Arabic—Grammar; *The Thousand and One Nights*.

Arabic (second course)—Interpretation of many of the poets, and the Koran.

Ethiopic—Grammar and chrestomathy.

General Semitic grammar.

INDO-IRANIAN LANGUAGES.

Sanskrit—Primer, grammar, reader, the *Pancatantra*.

Sanskrit Drama—Kālidasa's three plays, *Ratnavali*.

Sanskrit Epos—The *Mahā-Bhārata*.

Old Iranian—The *Avesta*.

Pali—The sacred books of Buddhism.

GREEK.

Six lectures to the freshmen—two on Socrates and Plato.

Herodotus, **Homer's Iliad**, **Odyssey**, **Lysias**, **Plato**, **Euripides**, **Aristophanes**; with reading at sight, and Goodwin's *Moods and Tenses*.

Greek prose composition, **Andocides**, **Demosthenes**; lyric poets—**Sophocles**, **Æschylus**, **Thucydides**, **Xenophon**, **Æschines**, **Lycurgus**, **Aristotle**, **Pindar**; with a study of the life of the ancient Athenians, their literature and history, and of the archæology of Greece

LATIN.

Cicero's orations and selected writings; **Sallust**, **Virgil**, **Livy**, **Terence**, **Plautus**, **Pliny**, **Tacitus**, **Horace**, **Juvenal**, **Martial**, **Catullus**, **Lucretius**, **Quintilian**, **Gellius**; with Latin composition, and practice in Latin expression and style; history of the early Roman Empire, of the private life of the Romans, of the Roman drama and of Latin literature.

GREEK AND LATIN.

Greek and Latin comparative philology.

Practice in text criticism, and interpretation of Greek and Latin authors.

ENGLISH.

Rhetoric and English composition; lectures on English literature; twelve themes; lectures and discussions of themes.

Forensics—Ten lectures on argumentative composition.

Oral discussion of topics in political economy and history.

English Anglo-Saxon reader; Anglo-Saxon poetry.

Early English, English literature—Chaucer, Bacon, Milton.

The English Bible; Spenser, Shakspeare, and from Shakspeare to Dryden; the drama (exclusive of Shakspeare) from the miracle plays to the closing of the theaters; English literature of the eighteenth century, and poets and prose writers of the nineteenth century; also, study of special topics and elocution.

GERMAN.

The courses in German include translations from the best of the German prose and poetical works, and a study of the history of literature and art in the middle ages, and from the Reformation to the middle of the nineteenth century. Also, of the Nibelungenlied and Die Minnesinger, and translation from Mediæval German into modern German. Practice in writing and speaking German. Opportunity is also furnished for the study of Gothic.

FRENCH.

The French courses are very complete. Besides the practice in writing and speaking French, translations are made from all of the best known poets and prose writers, not less than twenty-five authors being selected. By lectures and themes attention is given to French literature and history, to the renaissance in France, to the songs and romances, to French society and literature in the middle ages, to old French, and to modern words and plays.

ITALIAN.

Italian prose selections, stories and novels, grammar and prose composition, modern drama and essays—Torquato, Tasso, Ariosto.' Selections from Boccaccio, Petrarca, Dante, Nannucci's Manual, and outline of the history of Italian literature.

SPANISH.

Grammar, Gil Blas, El Eco de Madrid; selections from Calderon, Lope de Vega, and Cervantes. Also, in early Spanish, the poem of the Cid, with a study of modern literature, the history of Spanish literature, and prose composition.

ROMANCE PHILOLOGY.

Introduction to the comparative study of the Romance languages.

Phonetics to explain the sound changes in the Romance languages.

Old French—Phonology and inflexions.

Provençal—Phonology and inflexions.

Historical Italian grammar—Phonology and inflexions, with reading of old Italian texts.

Old French dialects, with special reference to Anglo-Norman.

The French element in English.

Low Latin.

In addition, opportunities are afforded for the investigation of special subjects, under the guidance of the instructors.

Romance philology conferences are held twice a month.

PHILOSOPHY.

History of philosophy—Lectures and essays.

Logic and psychology—Lessons and lectures.

Ethics—Recent English contributions to theistic ethics; Martineau's types and Martineau's study of religion; theses and lectures.

Earlier French philosophy from Descartes to Leibnitz, and German philosophy from Kant to Hegel.

Philosophy in Germany since 1780.

Philosophy of nature, including the modern doctrine of evolution; the ethics of social reform; the questions of charity, divorce, the Indians, labor, prisons, temperance, etc.

The philosophy of religion—Its history from Lessing to Schleiermacher.

For special research there are questions in psychology, in metaphysics, and in ethics.

POLITICAL ECONOMY.

Mills's principles of political economy; Cairne's leading principles of political economy; Dunbar's chapters on banking, topics in money, finance, labor, and capital, coöperation, socialism, and taxation.

History of economic theory.

Investigation and discussion of practical economic questions.

Economic history of Europe and America since the seven years' war.

Economic effects of land tenures in England, Ireland, France, and Germany.

History of tariff legislation in the United States.

History of financial legislation in the United States.

Management and ownership of railways.

Competent students can pursue special investigations of selected topics under the guidance of any one of the instructors.

HISTORY.

Mediæval and modern European history.

Constitutional government, elementary and advanced course.

History of the development of political and legal institutions in Greece and Rome to the fall of the Roman Republic.

Later Roman and early mediæval history.

The conflict of Christianity with paganism.

The mediæval church.

History of government and administration in France from the Frankish period to modern times.

Constitutional and legal history of England to the sixteenth century.

The era of the Reformation in Europe.

European history during the seventeenth, eighteenth, and nineteenth centuries.

American colonial history (to 1783) and history of diplomacy since 1815.

Constitutional and political history of the United States (1783-1861).

General history of the United States.

Elements of public international law; history of treaties.

Studies in the comparative history of religions.

In addition there is opportunity for special advanced study and research.

ROMAN LAW.

History and institutes of Roman law.

Advanced study of special topics; selections from the digest.

THE FINE ARTS.

Principles of delineation, color, and chiaroscuro.

Principles of design in painting, sculpture, and architecture.

Ancient art.

Roman and mediæval art.

Literature and the fine arts in Italy during the middle ages and the renaissance, with special study of Dante.

Greek archaeology—The progress of archæological discovery in Greece, and of the knowledge of Greek art from the fifteenth century to the present time.

MUSIC.

Harmony; counterpoint; history of music; canon and fugue; free thematic music; forms of modern instrumental music; instrumentation; study of the scores of the great masters; exercises in orchestration.

MATHEMATICS.

Logarithms; plane trigonometry, with its applications to surveying and navigation. Analytic geometry; elementary and higher and solid geometry; algebra.

Elementary mechanics.

Practical applications of plane trigonometry; spherical trigonometry; applications of spherical trigonometry to astronomy and navigation.

Differential and integral calculus, first and second course.

The elements of mechanics.

Quaternions and theoretical mechanics; analytic mechanics.

Higher plane curves.

Trigonometric series; introduction to spherical harmonics.

Theory of the potential.

The theory of functions.

Hydromechanics.

The following two courses consist in investigations and reading, and students are expected to present their results from week to week in the form of lectures and theses:

(a) Questions in the theory of functions.

(b) Higher algebra.

PHYSICS.

Physics (lectures)—Experimental physics; measurements in mechanics, sound, heat, light, electricity, and magnetism, with lectures and laboratory work.

General descriptive physics.

Sound and color, with special applications to electrical and telephonic apparatus and to photography.

Electrostatics, electrokinematics, and parts of electromagnetism, with the mathematical theory concerning them.

Electrodynamics, magnetism, and electromagnetism.

Light, a general treatment of optical phenomena.

Thermodynamics, and the kinetic theory of gases.

Heat engines and dynamos.

There is opportunity for advanced study in spectrum analysis, electrostatic measurements, sound and elasticity, and electromagnetism.

CHEMISTRY.

Elementary chemistry, experimental chemistry, and general descriptive chemistry, including its applications in the arts, and embracing the scheme of the chemical elements.

Elementary lithology; determinative mineralogy.

Qualitative analysis; quantitative analysis (mostly laboratory work).

The carbon compounds.

Advanced problems in inorganic chemistry, including molecular weights and volumes, thermochemistry, and specific refractive power.

Crystallography and the physics of crystals.

Also advanced study and research in determination of atomic weights, atomic compounds, organic and inorganic chemistry.

NATURAL HISTORY.

(1) *Biology*.—Biology, zoölogy, botany, cryptogamic botany, microscopic anatomy, paleontology, and comparative osteology, with special research in embryology, general entomology, experimental vegetable physiology, structure and development of cryptogams, and paleontology.

(2) *Geology*.—Physical geography and meteorology; geology, with lectures, laboratory and field exercises.

Historical geology; field work for training in the principles of geological surveying and in the preparation of reports.

Economical geology, petrography, mineral veins, and metalliferous deposits.

North America, its physical geography and geology; the past and probable future development of its material resources.

One new department of study is announced in the college elective list 1889-90—that of Germanic philology. It offers instruction in Gothic, old high German, old Saxon, and Icelandic. Over 20 languages, dead and living, are now taught in Harvard.

Besides these courses there are evening readings, concerts, public lectures, etc.

In the above we have presented in as condensed a form as possible the various courses of instruction which are now offered to the students of the college. It serves to lay stress upon and illustrate not alone the fact of the marvelous advance that Harvard College has made during the two and one-half centuries since its opening, but much more than this, it shows what immense strides have been made in science and in all other departments of learning.

DEGREES CONFERRED.

Since the regulation of 1872, a student who is qualified to receive the degree of bachelor of arts may be recommended either for an ordinary degree, or for a degree with distinction in one of three grades; but no student will be recommended for this degree until he has passed in all prescribed studies and in the requisite number of elective courses; and has moreover stood above grade D (40 per cent.) in at least one-fourth of all his college work. In conferring the degree these three grades are distinguished from each other by *summa cum laude*, *magna cum laude*, and *cum laude*. The reason for the grade of distinction in the degree is stated in the diploma, and when two reasons exist, both are stated.

The degree of bachelor of laws is conferred upon students who, having been in the school at least two full years as candidates for a degree, have passed satisfactory examinations in the entire course. The grade of *cum laude* is conferred upon such as have distinguished themselves by the excellence of their examination throughout the course.

The same grade is conferred with the degree of doctor of medicine upon such candidates as have pursued a complete 4 years' course, and obtained an average of 75 per cent. upon all the examinations. There is no grade with the degree of bachelor of divinity, but with the degree

of bachelor of science the grades are the same as those distinguishing that of bachelor of arts.

Since the commencement of 1872 the degree of master of arts has not been given in course. According to the present rules of the corporation and overseers—

the degrees of master of arts and doctor of philosophy are open to bachelors of arts of Harvard College and to bachelors of arts of other colleges who have satisfied the college faculty, by examination, that the course of study for which they received the bachelor's degree is equivalent to that for which the bachelor's degree is given in Harvard College, or have passed such additional examinations as that faculty may prescribe.

The faculty of arts and sciences recommends for the degree of master of arts candidates otherwise properly qualified, who, after taking the bachelor's degree, pursue for at least one year at the university (for the doctor's degree two years) a course of liberal study approved by the appropriate faculty, and pass with high credit an examination on that course.

HONORS.

Undergraduates are encouraged to attain distinction in specified departments of study by a system of study of special honors (instituted in 1870) and now classified as final honors, honorable mention, and second-year honors. The latter was first announced in 1871-72, and honorable mention in 1879-80, the class of '80 being the first to receive it. The final honors of two grades are awarded at the end of the college course to such students as prove by examination that they have made exceptional proficiency in certain departments of study. The second-year honors are also of two grades, honors and highest honors, and are awarded to sophomores and juniors, and to seniors who intend to be candidates for final honors in some year after graduation. They are open to freshmen only by special vote of the faculty. These honors are awarded by the faculty on the recommendation of special committees of examiners, and the award is printed with the annual rank list and in the University Catalogue.

Since 1879-80 "such members of the graduating class as are selected by the faculty receive honorable mention on the commencement programme and in the next following annual catalogue, in any one or more of the following studies: Semitic languages; Sanskrit, Greek, Latin, English, English composition, German, French, Italian, and Spanish; romance, philology, philosophy, political economy, history, fine arts, music, mathematics, physics, chemistry, natural history, and engineering." At the commencement in 1888 22 received final honors, 120 honorable mention, and 18 second-year honors.

FELLOWSHIPS.

The university has within the last 22 years been the recipient of a number of fellowships, the annual value of which varies from \$500 to \$750 each. These fellowships have been given mostly under conditions, and for certain definite objects. The greater part are for grad-

uate students, and in the regulations governing about one-half of all permission is given to the incumbent to reside abroad for the purposes of study.

The appointments made by the President and Fellows of the university for the "Parker Fellowships" must receive the approval of the governor and chief justice of the Commonwealth of Massachusetts, and the president of the American Academy of Arts and Sciences.

A few years ago Mr. Robert Treat Paine established a social science fellowship at Harvard, which was bestowed for the first time in 1887-88. The recipient, Mr. Edward Cummings, spent some time in Europe, mostly in London and Paris in the practical and theoretical study of sociological questions with a view to the location of a work in Boston which shall be directly connected with Harvard University, and which shall do for the more degraded parts of Boston what Toynbee Hall, as the representative of Oxford University, has done for the slums of East London. It is believed by those who have given their best attention to the matter, that it is possible to apply the intelligence of the university to the destitution and despair of a great city in such a practical way that the two extremes of society shall be brought together for social amelioration. Within a reasonably short time it is likely that students of Harvard University will be spending at least a portion of their time in work among the most degraded people in the city, and will here learn how to deal with the social problems of our time by experience and knowledge of their character. Mr. Paine has been a pioneer in this enterprise, and is likely to be one of its chief promoters in the future. Partly suggested by what has been done by the university men in East London, it is truth to say that long before this London work had been undertaken Mr. Paine had distinctly outlined what might be done by members of the university in the slum section of Boston. He did this in a paper read before the Episcopal Church congress about the time that Arnold Toynbee was making his own experiments in East London. It may be said also that the suggestion of this work here grew out of the operation of the Associated Charities.

PRIZES.

In addition to a large number of prizes¹ given each year by Harvard University "a distribution of books called Deturs is made from the

¹The Bowdoin prize for English dissertations and for Latin and Greek composition, the Boylston prizes for elocution and for medical dissertations, and the prizes for law students were the only prizes given in Harvard previous to the year 1857, when the Boyden prizes in mathematics were established. The latter, after the first award, were discontinued, and, in 1860, the "Harvard mathematical prizes" were established by the Hon. John C. Gray. These also were discontinued after 1862. Prizes in reading were introduced in 1864, and awarded to members of the several classes. Other prizes, like the "Chauncey Wright prize," the "Dante prize," the "Sargent prizes," the "Tappan prize," and the "Sumner prize" have since been established.

income of the Hopkins Foundation, near the beginning of the academic year, to meritorious students of 1 year's standing. Deturs are also given to those members of the junior class who, not having received them in the sophomore year, shall, in the course of that year, have made decided improvement in scholarship. In 1887-88 thirty Deturs were given in the sophomore class and three in the junior class."

SCHOLARSHIPS.

Over 130 scholarships,¹ to the aggregate amount of \$29,590, are now assigned to students in different departments of the university. They furnish an annual income varying from \$90 to \$350. They are awarded by the corporation unless the donors have otherwise ordered. The choice is made among applicants according to the rank sustained in scholarship; in short it may be stated that pecuniary aid is so generously offered that the government is justified in saying: "The experience of the past warrants the statement that good scholars of high character and slender means are seldom or never obliged to leave college for want of money;" and it is not an unknown thing for a student "to present himself penniless at the beginning of his freshman year and carry off the highest honors, sustaining himself by the pecuniary rewards given to high scholarship." Hereafter these scholarships will be assigned only to the three upper classes on the basis of the work of the previous year. The seniors are no longer to have aid given just as they are graduating.

According to President Eliot a scholarship is not something to be ashamed of and regarded as a badge of poverty. It is rather "an academic honor as well as a money gift." "I regard," he says, "the winning of one of our scholarships as a thing which any young man may be proud of."

Harvard holds funds to the amount of over \$1,200,000 in trust for the purpose of giving aid in scholarships and in other ways to deserving students. The income of these funds for 1890-91, was over \$70,000. It has systematic ways of aiding poor students to earn money in their spare hours. It has hundreds of rich graduates living within sight of Memorial Hall who have only to hear that a clever student is in need of money to take steps to relieve his distress.

THE NEW METHOD OF TEACHING.

This, in brief, is to preserve the valuable features of recitations by adopting and developing the seminar. In following the old plan of recitation "the reciter gained, but the gains of the rest of the class were small." Of late years lectures have to an extent taken the place of

¹The first scholarship in Harvard College was established by means of a donation of £100, received in England, from Lady Mowlsion. The money was deposited in the treasury of the colony in the spring of 1645. The donation was secured by Mr. Thomas Weld, who stated, that on account of the "pious desire of the lady signified, they settled £10 per annum forever upon two poore scholars in the colleges, £5 apiece.

recitations. But the lecture system may simply be a "broad road to ignorance." "Learning is criticism, it is attack, it is doing, one must perform processes himself." These things are now becoming better understood. At Harvard there now remain few courses of pure recitation or of pure lectures. In some, especially in elementary courses, lectures run parallel with a text-book. In some theses, that is written discussions, are exacted monthly, semiyearly or yearly, in addition to examinations. In some examinations are frequent. In some a daily question to be answered in writing on the spot is offered to the whole class. Often, especially on philosophical subjects, the hour is occupied with a debate between professor and students. More and more physical subjects are taught by the laboratory; those that are linguistical and historical by the library. Thus it is believed that study in Harvard is today made "more interesting, energetic, and persistent than it has ever been before."

With the men who are inclined to work the course becomes harder as they advance; and the most diligent studying, as a rule, is probably done in the senior year. It is possible now for a man to gain a B. A. from Harvard without knowing a word of Greek; but this seldom happens, since very large acquisitions in science or literature are required as an equivalent.

Most of the professors make the mid-year and final examinations severe tests, and if a man does not give satisfaction, or "cuts" too freely, he can be dropped from the course, and even from college. Such exclusion is said to occur every year in the case of perhaps a score of freshmen. The classes differ in size according to the popularity of the subject and of the teacher. One hundred and fifty men, or even more, often flock into a single lecture room.

An excellent judge of the present aims and purposes of the university and of the improvements that have been made says:

It is impossible for men to read the history of their own times aright, and I may be much in error in measuring the causes which have led to the enlargement in the motives of the university which have taken place in my own time. It is clear, however, that the most characteristic change in the theory of training which marks the development of Harvard College in this period is found in the fact that a very much larger measure of personal liberty has been granted to the students. The way in which this change has come about is not easily discerned. It has probably been due to many causes. One of these is doubtless the development of the elective system. Of old the student was "a getter of lessons," and the instructor an agent for enforcing routine duties. In the new system the student is tacitly, and in most cases properly, assumed to be in pursuit of a training which seems to him and his advisers fitted for the ends which he seeks to attain in life.

It was Louis Agassiz who by example taught the college that there was a better way than the old disciplinary regulation. He was never known to chide students. He tried to arouse in them the spirit of self dependence and fire them with a devotion to their work and a loyalty to their masters. Professor Shaler says that he would frequently leave

them alone for months while they were about their appointed tasks, and so self-reliant did they thus become that, so far as he has been able to ascertain, not one has ever made a failure of life. "They have generally proved self-reliant, painstaking men, ready for any occupation in war or peace," showing no lack of order, but among the greatest of workers, and far surpassing "in their accomplishments any equal number taken at hazard from the rolls of the college."

Since Professor Agassiz's day "the ideal of personal liberty which is to be granted to students of all grades in the university" has been advanced "with almost startling rapidity." The motives which have led to these changes "result from the development of the civilization in which the university is lodged, and they represent the advance in the educational and other social influences of the friends and governing boards of the institution, in a striking and original manner."

As to the effect of these changes the faculty are in almost perfect accord. They hold that the results attained have been exceedingly beneficial to the students; that "the system of instruction has been made such that the youth, while gaining the spirit of culture which it is, above all, the function of higher education to develop, may at the same time fit himself for some tolerably definite place in the work of the world." Of course, there are students, especially in the two lower classes, to whom the new system of instruction is not adapted. Yet by the best authority it is held that these do not exceed one-fifth of the whole number. By the time the senior year is reached scarcely 10 per cent. can be found that have not been beneficially influenced by the liberty and counsel to which they have been subjected. It is with reference to this remnant that the disciplinary system of Harvard College needs adjustment. The facts show "that year by year, for 2 decades, *the college has gained in its moral as much as in its educational tone.*" In the three classes from 1885 to 1888 the estimates did not show that more than from 2 to 3 per cent. of the students had "gone down during their college career."

Hand in hand with the development of this principle of academic freedom there must be some system devised which shall bring teacher and pupil into close personal and friendly relations.

It has been felt by educators everywhere that the freedom of the elective system at Harvard threw too much responsibility upon students at an age when their judgment is not sufficiently ripened to direct their future course. If some revision could be made by which, instead of limiting the student's freedom, he could be assisted in his judgment by the experience of the Harvard faculty, and by contact with a ripper and more judicious mind, the difficulty of too much freedom would be avoided. This is precisely the point to which the growing convictions of the Harvard faculty have now arrived. It has been found by the test of actual experiment, in the side work of the university, that in the placing of students in their intellectual work under the oversight and

in the personal care of professors who know something of them as individuals, the judgment of the student is assisted without taking away his independence, and the results in his education are greatly improved. Trial of this was made some years ago, says Professor Shaler, in the class known as "special students." In 1873 the college had been opened to those students from whom no examination was required. It soon became evident that a further continuation of this privilege would be detrimental to the interests of the college, unless some effective method could be devised of managing this miscellaneous assemblage of young men, which was rapidly increasing. To accomplish this purpose these special students were put in charge of five college officers. This committee adopted in substance the following plan, which has thus far met the expectations of its authors:

Before the applicant is admitted to the privilege of a student in this department of the school he is required to give a sketch of his work in other schools or with other teachers, and also a list of references chosen from men of more or less distinguished position in this community. Correspondence with these teachers and the other persons to whom the candidate refers bring the student before the committee at the outset of the term with a considerable body of information concerning his past history. He is also required to set forth his purposes in the way of an education. On the basis of this record the student is then delivered to the care of one of the members of the committee. The adviser has a friendly talk with him, considers the project of his studies, and arranges with him concerning his first year's work. In the subsequent meetings, which, if necessary, are numerous, this officer obtains as definite idea as possible as to the quality of the youth.

The adviser is also aided by the opinion of the instructors in the electives he pursues. Whenever the further residence of a special student at the college seems undesirable, on the recommendation of the committee the faculty deprive him "of his privileges as a student," and from that moment his connection with the college ceases.

One of the greatest advantages arising from this system is the friendly relation which is usually established between the instructor and student at a time when the latter needs just such a counselor and friend. Thus it often happens that a professor acquires large *clientelæ* of youths who gather familiarly about his fireside as though they were his kinsmen.

It is now decided to extend the above-described system to the freshman class, which has been placed for that purpose under the charge of a committee of thirteen members of the faculty. Some member of this committee is appointed to welcome the entering student and advise him with reference to his choice and method of work and follow him at least through the first year as a watchful friend who stands ready to render all needed counsel and aid. After a personal interview with the professor who has been appointed as his adviser the freshman decides what studies he will take. The written permission of the adviser is a necessary prerequisite to taking a given course. This supplies the missing link in the work of the higher education. It is a delicate responsibility, and many of the faculty may not feel adapted for such service; but out

of a body of 65 men there can probably be found enough who in their sympathy with youth are peculiarly well fitted not only to give counsel, but also to arouse latent motives, and, while gaining their esteem, set before the youthful aspirants the highest ideals of life.

When this shall have been accomplished Harvard will be different from colleges that now exist—"one in which freedom and friendship may together aid the youth to acquire the strength and the skill which he will need in the work of the world." (Professor Shaler in *Atlantic Monthly* for July, 1889.)

THE ELECTIVE SYSTEM.

Harvard is preëminent among the colleges of the land for its elective system of studies, which after some fluctuations may, since the accession of President Eliot, be regarded as definitely established. Though introduced in the face of much opposition the system has, by its intellectual and moral advantages, converted opposition into stanch support. It has constantly grown in popularity with both professors and students, and each year the number of elective courses is increased and their scope enlarged.

HISTORY OF THE MOVEMENT.

The first innovation which pointed to the possibility of a choice in studies occurred at Harvard about a hundred years ago, when such students as were not preparing to enter the ministry were granted an exemption from the study of Hebrew and certain theological exercises. With this exception the course of study was the same for all students for nearly 2 centuries, or up to the year 1824. At that time the two lower classes were confined almost exclusively to the study of Greek, Latin, and mathematics, the only exception to this being that a small portion of time was given by the freshmen to ancient history, English grammar, and declamations, and by the sophomores to fragments of rhetoric and logic, and to ancient history and declamations. Latin, Greek, and mathematics made only about one-third of the work of the junior year, which was occupied mainly with metaphysics and natural philosophy. One hour a day was given to Hebrew or its substitute, generally a modern language. The seniors had no Latin or Greek. About one-third of the recitations of this year were in mathematics and natural philosophy, and the rest of the year was devoted to moral and political philosophy and to theology. The seniors and juniors wrote themes once a fortnight and had forensics once a month.

This shows that the opportunities for academic training were in many respects superior to those enjoyed in the early days of the college, but meager in comparison with the curriculum furnished to-day. This training seems to have produced good results, and was regarded with favor by most of the professors who were then connected with the college. But modern languages were as yet practically excluded and changes in the system were inevitable. To Prof. George Ticknor, who occupied the new

chair of modern languages from 1816 to 1835, and to Judge Story the honor is principally due for the inauguration of the elective system. In the years 1825-26 and 1826-27 a new arrangement of studies was effected, by which three hours a week throughout the course, with the exception of the first and third of the freshman year, was given to elective studies. These hours could be devoted in the freshman year to Greek, Latin, and modern languages; in the sophomore year to Greek, Latin, mathematics, and modern languages; in the junior year to Greek, Latin, mathematics, modern languages, and Hebrew; in the senior year to Greek, Latin, Mathematics, modern languages, chemistry, mineralogy, and geology.

In 1830, in order to secure "a more thorough education in the Greek and Latin languages, mathematics, and rhetoric," the study of the modern languages was postponed until the beginning of the sophomore year. By a regulation adopted in 1838 mathematics ceased to be a required study after the freshman year, and "the standard of scholarship was believed to have been so greatly elevated in this department by the introduction of the new system of electives" that in 1843 the experiment was extended to Greek and Latin. During the 4 years from 1843-44 to 1847 the sophomores had 5 hours of required work in rhetoric, history, and philosophy; the juniors 6 hours of required work in philosophy, physics, and logic; the seniors 8 hours of required work in ethics, physics, rhetoric, political economy, and Constitution of the United States. All the remaining hours of required work were given to elective studies. It will be seen, therefore, that 30 years ago the elective system had reached a high stage of development. Indeed it was believed to have grown too rapidly, and a reaction soon followed. In President Everett's report for the year 1847-48, we find that—

During that year all the studies of the freshman and sophomore years, including mathematics and the French language, were required studies. This change was the result of a compromise of the opposite views, prevailing in the faculty on the general question of the expediency of continuing required and elective studies in a system of collegiate education.

In 1849-50 the ancient order of things had been so far restored that, with the exception of one elective of 3 hours in the junior and senior years, all the studies were required. President Sparks in his report for that year uses the following language:

This system (elective) was attractive in theory, but in framing it the consideration was not sufficiently weighed that what was gained in one study was necessarily lost in another. The system was subjected, however, to a fair and patient trial. In practice it never fulfilled all the expectations of its framers, and it soon began to fall into partial disfavor.

Again, in his report for the year 1851-52 he takes occasion to remark that—

The voluntary system, as it has been called, is still retained to a certain extent, rather from necessity than preference.

In 1856 the courses in Latin and Greek of 3 hours each were taken from the electives and added to the required studies of the junior year.

From 1847 to 1867 the elective system was in abeyance, but a growing interest in the study of philology, philosophy, and history, and, above all, in that of the physical and natural sciences, compelled the college to make a second trial of the elective system. Such changes were made in 1867 as amounted in effect to the restoration of the elective system as it existed from 1843 to 1847. In the twenty and more years since then this system has become more and more popular, and could not now be changed without revolutionizing the college.

The following studies are now prescribed for all candidates for the degree of bachelor of arts:¹

¹ In May, 1886, the struggle which had been going on in the college "between the Harvard of conservative progress and the Harvard of radical reaction," culminated in a victory for the latter. The nature of this struggle, and the alarm which it created among the constituents of the New England Association of Colleges, can be best understood by a reference to the paper which was signed by the presidents of Yale College, Brown University, Dartmouth College, Williams College, Amherst College, Trinity College, Wesleyan University, and Boston University, and presented to the overseers of Harvard University. It was as follows:

To the honorable and reverend the overseers of Harvard College:

Whereas it appears from the public prints that your honorable body is soon to be called upon to consider a proposition so to modify the conditions of admission to Harvard College, and of promotion to the degree of bachelor of arts therein, that this degree will no longer be evidence that its bearer has been instructed in both Latin and Greek; and

Whereas it is evident that the proposed change seriously concerns the bearers of this degree everywhere; and

Whereas it is our clear conviction that the introduction of such a change in the conditions and significance of the degree in your institution would injuriously affect every classical college in America, and the work which they are now able to do for the cause of a truly liberal education:

We therefore, the undersigned, representatives of the New England College Association, in which, from the beginning, Harvard College has been an honored participant, and with which the Harvard College faculty has lately coöperated in the securing of more uniform requirements for admission to all our colleges, do hereby earnestly and respectfully request your honorable body not to approve of the proposed changes until after procuring a formal expression of opinion upon the subject from the leading colleges of the United States.

As true friends of the venerable and flourishing institution of which you have the oversight, and as in some measure jointly responsible with yourselves for the educational standards and work and reputation of our country, we venture to present this respectful request, and to hope that it will be received as evidence that in the fellowship of a common aim we are

Most sincerely yours,

[The signatures.]

But the advocates of the new policy which broke with the traditions of the past were in the ascendancy, and no action appears to have been taken by the overseers with reference to the appeal of the associated colleges. How the matter was regarded by some of the oldest and most honored colleges outside of New England, is shown by the letter of Prof. Andrew F. West, of Princeton College, to The Indepen-

Freshman year:

Rhetoric and English composition. (English *A.*) *Three times a week.* Chemistry. (Chemistry *A.*) *Lectures, once a week, first half-year.* Physics. (Physics *A.*) *Lectures, once a week, second half-year.* German or French. (German *A* or French *A.*) *Three times a week.*

Prescribed for those only who did not present themselves for examination on the study at entrance.

Sophomore year:

Twelve themes, with lectures and discussions of themes. (English *B.*)

Junior year:

Four forensics each year.¹ (English *C.*)

ELECTIVE STUDIES.

Elective studies are classified as courses and half-courses, according to the estimated requirement of work in each. Every candidate for the degree is required to pursue each year *four* elective courses, or an equivalent amount of courses and half-courses; but of freshmen for whom French or German is a prescribed study, *three* elective courses only are required. Of the elective courses required of freshmen, not more than two may be taken in the same department except by special permission of the dean.

No student is allowed, except by special permission of the dean, to arrange his work so as to take less than the equivalent of three half-courses during either half-year.

The prescribed and elective studies required of each student, as specified above, together with such additional studies (if any) as he may take for the purpose of making up past deficiencies, constitute his regular work for the year.

A student whose record of work performed is complete at the beginning of any year may take elective studies in excess of the amount required, to the extent of one

dent, New York, May 6 and May 13, 1886. He says (among many other things) of the changed significance of the A. B. degree at Harvard:

"It does not mean, nor does it include as a part of its meaning, what it has always meant heretofore, and that is, the completion of a common course of disciplinary study. It does not, then, mean what the old college degree did; and to transfer it, with whatever prestige the old degree gave, to label all sorts of attainment, is academic misrepresentation. If the 'comprehensive significance' of the degree at Harvard needs the prestige of the old title to give it presumptive acceptance, then the reason for its transference is intelligible, but it is unique in educational history. If it does not need this, it is unfair to obscure a hitherto well-understood degree by destroying its old meaning. Let everything be labeled for what it is; and where it has meant one distinct thing for ages, let a new degree label the new education, so that it may come out from under cover of the old title for inspection."

For a further view of this subject see the Annual Report of the President of Boston University for 1885-86, pp. 17-25.

Per contra, President Eliot, in the Annual Report of Harvard College for 1888-89, declares that "the changes in the requirements announced in 1886 were not intended to lower in the slightest degree the standard of admission, and they have had no such effect."

¹For forensics candidates for final or second-year honors may substitute theses in their special departments, provided such substitution be approved by the instructors in those departments, and by the instructor in forensics; but no thesis that forms part of the work in any of the student's regular courses may be so substituted. A commencement part may be substituted for two forensics, but in order to be accepted for this purpose, it must be handed in on or before the *third Wednesday in April*.

course in his freshman year, and of two courses in any subsequent year. In each of the studies pursued under this provision the student assumes the same responsibility and is entitled to the same privileges as if his work were limited to the required amount. He may, however, at any time withdraw from any study which he is pursuing in excess of the required amount by giving written notice to the secretary.

A student whose record is deficient at the beginning of any year is expected to to pursue during that year such studies, in addition to those otherwise required, as may be necessary to make up the deficiency, in accordance with the regulations of the faculty; and these additional studies will be treated in all respects as part of his regular work. With the consent of the dean he may take additional studies beyond the amount necessary to make up his deficiency, under the conditions stated in the last paragraph.

A student who wishes, without assuming all the responsibilities of a regular study, to attend the instruction in any course, may do so on obtaining leave of the instructor; but no record will be kept of his attendance and he will receive no credit in the course.

Every student is required to satisfy the instructor in each of his courses of study, in such way as the instructor may determine, that he is performing the work of the course in a systematic manner. Instructors will provide suitable tests (either for all or for a part of their students) with sufficient frequency to give effect to this regulation, and will report at once to the dean the names of any students who have not satisfied them that they are doing their work systematically.

Any instructor, with the approval of the dean, may at any time exclude from his course any student who in his judgment has neglected the work of the course. Such exclusion shall be reported to the faculty at its next meeting.

Any student who has been excluded from one or more courses may be required to place himself under the direction of a person approved by the dean.—(Harvard University catalogue 1889-90.

In making his choice the student is limited to those studies which his previous training qualifies him to pursue, and he must observe any restriction that may be attached to the particular courses he wishes to select. Students are strongly urged to make their choice with the utmost care, under the best advice and in such a manner that their studies from first to last may prove a rationally connected whole.¹

During the year 1884-85 the freshmen of Harvard College chose for the first time a majority of their studies. Up to that time no college, so far as I know, allowed its first year's men any choice whatever. Under the new Harvard rules but seven-sixteenths of the work of the freshman year is prescribed, the entire remainder of the college course, with the exception of a few exercises in English composition, is elective. A fragment of prescribed work so inconsiderable is likely in time to disappear.

After more than half a century of experiment the Harvard faculty are convinced of the worth of the elective system. In their eyes option is an engine of efficiency. They declare that their new principle has been proven so safe and effective that it should supplant the older method. It must be remembered that the new method is a system.

¹ For the further treatment of the elective system we are largely indebted to the monograph upon "The New Education," by Prof. Geo. Herbert Palmer, of Harvard University, published in 1887. It had been previously published in the *Andover Review* for November, 1885.

Its student is still under bonds, bonds more compulsive than the old because fitted with nicer adjustment to each one's person. What a young man's study shall be, and what its grade of excellence, a body of experts decides. The student himself determines its specific topics. It is not like an American at a German university or at a summer school of languages. Such pursuit of knowledge is unsystematic.

After the studies of the freshman year have been completed, partly prescribed and partly elective, a Harvard student must pass successfully four elective courses in each of his subsequent 3 years. By "a course" is understood a single line of study, receiving 3 hours a week of instruction. Fifty per cent. of a maximum mark must be won in each year in order to pass. Throwing out the freshman year, the precise meaning of the Harvard B. A. degree is therefore this: Its holder has pursued twelve courses of study, selected by himself, and has mastered them at least half perfectly. Here, then, is the essence of the elective system, fixed quantity and quality of study, variable topic. It is evident, therefore, that there is nothing now to prevent the bright student from completing the course for the bachelor's degree in three years.

The studies open to choice in the freshman year are few; only one-eighth of 172 courses in 1886-87, and this number is reduced usually about one-half by insufficient preparation or conflict of hours. Seemingly about one-third of the list is offered to the average sophomore; but this amount is again cut down nearly one-half by the operation of similar causes.

The objections brought against the system are in reality not leveled against the elective system at all. They are directed against its bastard brother *laissez-faire*. Objectors suspect that the conditions of choice, which I have named, are not fulfilled. It is a fact; they are not. To accomplish that perfectly a longer trial will be needed, and the adoption of a better plan.

But the practice of hedging electives with qualifications is a growing one. It protects rational choice, and guards against many of the dangers which the foes of the elective system justly dread.

It was in 1825, on the recommendation of Judge Story, that options in modern languages were first allowed. Twenty years of experiment followed. In 1846 electives were finally established for seniors and juniors, in 1867 for sophomores, in 1884 for freshmen. But the old method was abandoned so slowly, that as late as 1871 some prescribed studies remained for seniors, till 1879 for juniors, and till 1884 for sophomores. Comparing the new Harvard with the old it is plain enough "that a revolution has taken place, but it is a revolution like that in the England of Victoria, wrought not by sudden shock, but quietly, considerably, conservatively, inevitably." The time of transition has been a time of unexampled prosperity. For the last 15 years (this was written in 1885) the gifts to the university averaged \$250,000 a year.

The steady increase in students may be seen at a glance by dividing the last 25 years into 5-year periods, and noting the average number of undergraduates in each: 1861-65, 423; 1866-70, 477; 1871-75, 657; 1876-80, 808; 1881-85, 873. The average number from 1886 to 1890 has been very much higher.

In the first century one-half the graduates of Harvard became ministers. Of the graduates of the last 10 ten years a full third have entered none of the four professions of preaching, teaching, medicine, or law.

As the demand came for an enlarged curriculum modern languages crept in, followed by sciences, political economy, new departments of history, literature, art, and philosophy. To multiply subjects was soon found equivalent to cheapening knowledge. There was, therefore, no way of acquiring the habit of intellectual mastery during the brief season of college life except by dividing the field, and pressing along paths where personal friction is least. Accordingly alternative options began to be allowed, at first between the new subjects introduced, then between these and the old ones. The old conception had been that there were certain matters a knowledge of which constituted a liberal education. Hence arose a new ideal of education, in which temper of mind had preëminence over *quæsitæ*, the guidance of the powers of knowing over the store of matter known.

It is the distinctive merit of the elective system that it strips off disguises, places the great facts of the moral life in the foreground, forces the student to be conscious of what he is doing, permits him to become a partaker in his own work, and makes him perceive that gains and losses are immediately connected with a volitional attitude. To permit choice is dangerous. Not to permit it is more dangerous, for it renders dependency habitual.

A manlier type of character actually appears as the elective principle extends. A greater ease in uprightness, a quicker response to studious appeal, a deeper seriousness, an increase of courtesy, a growing disregard of coarseness and vice. Hazing, window smashing, disturbing a lecture course are now things of the past.

The office of proctor has become a sinecure. The standing of the average student in his classes during the past 10 years has risen greatly, and this becomes more marked as the student approaches the end of his course, where the elective principle is least restricted.

The opponents of the system charge that the students will usually choose those courses which call for the least exertion. This is a *a priori* assumption, but statistics at Harvard all run the other way. Under a pretty loose elective system boys are little disposed to intentionally easy choices. In proof of this, make note of the choice in fifteen courses in 1883-84. Of the seniors and juniors, the only classes which had no prescribed studies at that time, there were in Mills's Political Economy, 125; European history from the middle to the eighteenth cen-

tury, 102; history of ancient art, 80; comparative zoölogy, 58; political and constitutional history of the United States, 56; psychology, 52; geology, 47; constitutional government of England and the United States, 45; advanced geology with field work, 43; Homer, sixteen books, 40; ethics, 38; logic and introduction to philosophy, 38; Shakespeare, six plays, 37; economic history, advanced course, 36; legal history of England to the sixteenth century, 35. In these years the senior and junior classes together numbered 404 men who chose four electives apiece; in all 1,616 choices were made. The above list shows 832; that is, about one-half of the total work of 2 years is here represented; the other half was devoted to interests more special, which were pursued in smaller classes.

The fact is that there are only six electives which can be entitled easy courses, and several of these must be reckoned by anybody an inspiration to the students who pursue them.

How, it will be asked, are choices so judicious secured? Simply by making them deliberate. In May an elective pamphlet is issued which announces everything that is to be taught in the college during the following year. Besides, most of the departments issue in addition pamphlets which describe with much detail the nature of their special courses, and the consideration which should lead a student to select one rather than another. The students then discuss with one another what their electives shall be, how this or that course is conducted, what are the peculiarities of its teacher, relative proportion of work to benefit derived, etc.

The perplexing question is, what courses to give up? All find too many which they wish to take. The pamphlet offers, possibly, 189 courses, divided among 20 departments. The five modern languages, for example, offer, all told, 34 different courses; Sanskrit, Persian, Assyrian, Hebrew, and Arabic, 14; Greek and Latin, 18 each; natural history, 19; physics and chemistry, 18; mathematics, 18; history and philosophy, 12 each; the fine arts, including music, 11; political economy, 7; Roman law, 2. These numbers will show the range of choice. On its extent a great deal of the efficiency of the system depends. But it is an expensive system for the college since it so greatly increases the corps of teachers.

Generally the choice of studies is made in June, but if not made at that time it must be before the academic year, in accordance with the regulations published by the faculty. No changes of elective studies are allowed after October 18, except by leave of a committee of the faculty, to whom application must be made in writing, after which no changes are allowed for the remainder of the year, unless the reasons appear to the dean very important. The courses are open to all students, except that in making choice it is not possible to take advanced studies until the preliminary ones have been passed.

The faculty try to prevent the wasting of time over unprofitable

studies. This they can not always do, and probably from a quarter to a third of the choices might be improved. It is difficult to find a recent graduate, who, if he were to choose again, would not make a different selection. Still the fault is even greater with prescribed studies, whether ill-judged, or ill-adapted, ill-timed, or ill-taught, they none the less inexorably fall on the just and the unjust.¹

But the wastes of choice chiefly affect the shiftless and the dull, men who can not be harmed much by being wasted. What is asserted, therefore, is not that in the elective system has been discovered the secret of stopping educational waste; it is simply that the monstrous and peculiarly pernicious wastes of the old system are now being reduced to a minimum. The business of teaching under the new system is rendered very much pleasanter. Under the elective system the student feels that he has something at stake in a study, and he comes to look upon time squandered as a personal loss. Under this system the student acquires the power to look up a single subject in many books. During 1860-61 56 per cent. of the Harvard undergraduates consulted the college library; during 1883-84 85 per cent.²

At present the Harvard student can "cut" every one of his twelve recitations, but by examination of the record of the senior class of 1883-84, it was found that after deducting all absences, excused and unexcused, and although some had been sick for considerable periods, and others had shamelessly abused their freedom, yet, reckoning all misdeeds and misfortunes, on the average each man had attended over ten out of the twelve recitations a week; that is, he had been absent less than twice a week.

Thus, if ever the Harvard system is perfected, so that students here are as eager for knowledge as the best class of German university men, I do not believe we shall see a lower rate of absence; only then each absence will be used, as it is not at present, for a studious purpose. The modern teacher stimulates private reading, exacts theses, directs work in libraries. Pupils engaged in these things are not dependent on recitations, as text-book school boys are. The grade of the higher education can not rise much, so long as the present extreme stress is laid on appearance in the class room.

The new spirit awakened is not confined to the student alone. The professors are themselves instructed. A teacher draws nearer his class and a closer personal relation is established between teacher and pupil, which serves to elevate the position of the students in the minds of the

¹ Twenty-five years ago every Harvard man waited till his senior year before beginning philosophy, acoustics, history, and political economy—that is, the seniors were largely occupied with text-book studies, as they are still in most of the fourteen other New England colleges.

² The college encourages him in aiming at a thoroughness and excellence in a limited field of study. At graduation special honors are accorded to all who show proficiency in one or more of the departments of study. But the successful candidates for such honors must have passed, with distinction, examinations on all the prescribed work of the college in that department, and on the elective courses in that or in kindred departments equivalent to it.

instructors. In the higher electives the students become collaborators with their teachers.

That system is good which opens the way for a teacher to discover whether his instructions hit and whether he is doing the best work he can for the students, gives students choice, and the professor gets the power to see himself as others see him. If a professor becomes negligent the students soon find it out and seek other instructors who keep abreast of the times. This desire for popularity among the best students furnishes an incentive to the instructor to do as good work as he is capable of.

There is, therefore, in the new method a self-regulating adjustment. Teacher and taught are put on their good behavior. But the new system is not yet a complete attainment. For one thing, it lacks organized means for bringing the student and his intuitions face to face. In no college is it fully embodied. It is an ideal toward which all are moving, and a powerfully influential ideal. Of its success as a whole there can no longer be any rational doubt; the only wonder is that the college should have waited so long before adopting it, as the experience of other lands had shown that only by giving attention to special branches of study could eminence or excellence be attained.

Harvard training works admirably with the studious, stimulatingly with those of weaker will, not unendurably with the depraved. These are great results. It does not claim to be perfection, nor does it claim to come near to perfection. Side by side with the nobler tendencies disheartening things appear. What is claimed is this, that the method which Harvard and other colleges have adopted is a demonstrably sound method. This should now be acknowledged, and criticism should turn to the important work of bettering the details of operation.

To this excellent treatment of the elective system from Professor Palmer, coming as it does from one who holds so honored a position in the university, we might add that—

The task of Harvard is to educate the best types of American manhood, and in the method proposed it is possible that this manhood shall be developed under friendly restrictions, and in such a way that its essential freedom shall not be impaired. To reach this end is the solution of one of the most pressing problems in American education.

President Eliot said at the alumni dinner in 1889:

Last year the faculty was called upon to issue some new regulations¹ to hold in check that very small percentage of students who abuse their privileges. But this is no sign of halting; it was made necessary by our rapid progress and the increased liberty to students attendant upon it. We cannot stop, as some conservative spirits would like, for repose. Harvard has always been in the van in the march of progress, and is spurred on by the example of the past to a still more earnest advance.

¹ Under pressure from the board of overseers the college faculty devoted the last half of the year to a revision of their regulations. They succeeded in devising important improvements in the following particulars: (1) In compelling the prompt and orderly resumption of work at the end of the long vacation and of the short recess; (2) in securing the accurate and prompt return of absences; (3) in providing for quick action in cases of neglect of duty; (4) in promoting systematic work on the part of the students by making a reliance on spasmodic applications dangerous, etc.—(Annual report of Harvard College for 1888-89,

It is believed that the increase in the number of students (and this has been most marked from those States where the elective system has not been introduced) has been due in large measure to the adoption of the elective system.

HARVARD'S EXAMINATION FOR WOMEN, AND "THE ANNEX."

This was originally intended as a careful test of proficiency in a course of elementary study of a liberal order, arranged for persons who might, or might not, afterwards pursue an advanced curriculum of studies. It differed, therefore, both in its purpose and in its selection of subjects from any college examination, whether for admission or for subsequent standing. But it applied the highest standard of judgment in determining the excellence of the work offered. It furnished a test of special culture in one or more of five departments. It was not intended to be taken as a whole, and did not, therefore, represent the studies of a college course, but was adapted to persons of limited leisure for study, such as girls who had left school and were occupied with home cares, or teachers engaged in their professional labors.

In *Scribner's Monthly* for September, 1876, the purposes of the new movement are set forth, and an idea given of the reception which has been accorded it. The writer says:

Harvard has undertaken to do for this country what Oxford and Cambridge are doing for England;

and he might have added, "and Edinburgh for Scotland." Its faculty held examinations for women at Cambridge first in June, 1874, 1875, and 1876. In 1874 Harvard gave only four certificates; in 1875 only ten candidates entered, and in 1876 only six. In the latter year it was decided that examinations should be held also in New York. A local committee was formed there, with Miss E. T. Minturn as secretary. This committee went to work at once to procure candidates for examination after the manner pursued in England, on the establishment of a new center, and met with much encouragement.

The examination took place in June of 1877. The examinations (held in a private house, or in some room hired by the committee) were almost entirely in writing. No one was permitted to be present but ladies of the local committee, and a representative officer from the university, who brought the question papers, took the answers as soon as the time allowed for each paper had expired, and carried the answers at the close of the examinations back to the university, when they were inspected by the examiners and reported upon to the candidates through the local committee. This is the English mode of proceeding.

The examination, as in the preceding years, was of two grades. The first was a preliminary examination for young women who were not less than 17 years old; the second an advanced examination for those who had passed the preliminary examination and who were not less than 18 years old. The preliminary examination embraced English literature,

French, physical geography, with elementary botany, or elementary physics, arithmetic, algebra through quadratic equations, plane geometry, history, and any one of three languages—German, Latin, or Greek. The advanced examination was divided into five sections, in one or more of which the candidate could present herself:

- (1) Languages. In any of the following: English, French, German, Italian, Latin, or Greek.
- (2) Natural science. In any of the following: Chemistry, physics, botany, mineralogy, and geology.
- (3) Mathematics. Solid geometry, algebra, logarithms and plane trigonometry, and any one of the three following: Analytic geometry, mechanics, spherical trigonometry, and astronomy.
- (4) History. For the first year, 1876, candidates could offer either of the two following: The history of Continental Europe during the period of the Reformation, 1517-1648; or English and American history from 1688 to the end of the eighteenth century.
- (5) Philosophy. Candidates might offer any three of the following: Mental philosophy, moral philosophy, logic, rhetoric, political economy.

Notice of intention to be candidates must be sent to the secretaries on or before April 1 preceding the examination. The fee for the preliminary examination was \$15, for the advanced examination \$10.

At the New York examination, referred to above, 18 candidates presented themselves, and the examination lasted a week, and was under the conduct of Professor Child. With the exception of a short oral exercise to test pronunciation of the modern languages, the examination was wholly in writing.

The committee were careful to lay stress upon the fact that they did not consider the preparation for these examinations equivalent to a course in Harvard, or other first-class colleges, and that they did not place the same value on a Harvard diploma and a Harvard certificate.

These examinations have now become a part of the regular work of the university, and are held every year simultaneously in New York and Cambridge (or Boston), in Philadelphia, and in Cincinnati, beginning on the last Wednesday in May. Since 1879 instruction as well as examination has been provided for by a new organization incorporated under the name of the "Society for the Collegiate Instruction of Women by Professors and other Instructors of Harvard College."

The first intimation of this movement for the private instruction of women by professors of Harvard University was made in a circular signed by the seven ladies who became the first managers of the annex, and was dated Washington's Birthday, 1879.

The terms of the circular were somewhat vague, but they were taken as evidence that privileges which had before been the right of men only were to be offered to women. The intention of the promoters of the scheme was, in fact, to provide for women, outside of the college, instruction of the same grade that men receive in it, united to tests of progress as rigid as those which are applied in the college.

The next step was the publication of a circular, giving the terms of

admission to the courses of instruction to be offered the first year. This was done in April. The Harvard examinations for women being in successful operation, they were made the basis upon which fitness for admission was to be determined.

Upon the eighth examination held in Cambridge, New York, and Cincinnati, June 30, 1881, in accordance with the wishes of the Woman's Educational Association, the candidates who presented themselves for examination were examined upon the subjects required for admission to Harvard College, with the exception, that the candidate could, if she chose, substitute French and German in place of Greek. The time and method of examinations and the papers used were the same as for the examination for admission to Harvard College, and the same privilege of passing a preliminary examination on a part of the subjects and of completing the course in a subsequent year was allowed.

Certificates were given, bearing the signature of the president, and specifying the subjects in which the candidate had passed.

The old order of examinations was then abolished except for such candidates as had passed on a part of the work required. The Woman's Educational Association took charge of the examination in Cambridge, and local committees had charge of the examinations in New York, Philadelphia, and Cincinnati. The certificate given to a candidate who passes upon all the subjects required for admission to the college entitles her to admission to the courses of instruction given in Cambridge by instructors in Harvard University, under the direction of the Society for the Collegiate Instruction of Women. It is also accepted, if presented within a year of its date, by Vassar, Wellesley, and Bryn Mawr Colleges as the equivalent for examinations in such subjects, whether preparatory or collegiate, as are covered by it.

THE ANNEX.

The building used for the recitations and lectures of the Harvard Annex is on the corner of Garden and Mason streets, and was formerly known as the Fay Mansion. In the front room, on the side toward the "Washington Elm," the Rev. Dr. Samuel Gilman, a relative of Judge Fay, wrote the favorite college song, "Fair Harvard."

A dozen Harvard professors are members of the "Annex" corporation, of which Mrs. Louis Agassiz is president, and Mrs. Alice Longfellow Thorp treasurer. This department bears no official relation to Harvard, and the names of its graduates do not appear in the college catalogue, yet over 40 members of the university faculty are on the "Annex" staff and under contract with the "Society." Its fundamental principle is the education of women by Harvard teachers, after the Harvard methods; and no instructor is employed who is not already connected with the university. The plan did not in any way originate with the college, though when it was brought to the notice of the professors it was adopted with much interest; and, during all its history,

it has been cordially supported by the teachers of the university, upon whom it depends for its life and efficiency.

The instruction in the "Annex" is a repetition of that given in the university. The examinations during the courses are the same as those of the college, and the rank of the women is determined by the professors who perform the work for the men in the college. Each student receives a certificate at the end of the year's work for the courses that she has pursued satisfactorily, and at the end of a term of 4 years another is awarded to those who have continued in the classes for that length of time. The certificates of 4 years' work are of two sorts—one awarded to those whose work has corresponded to that for which the university awards the degree of B. A., and the other simply certifying that the holder has pursued for that length of time a course of liberal study, the details of which are indicated by the certificates awarded each year of the course. The students are permitted to make use of the books in the college library, and in other ways besides the important matter of instruction they derive advantage from proximity to the university.

The fee for the examination is, for the first year \$10, for each subsequent year \$5. Young women in narrow circumstances are aided in meeting the cost of these examinations, either by a remission of fees, a loan, or by gratuitous board and lodging during the examination.

In 1889 the New York local committee offered for competition two scholarships, one of \$300 and one of \$200. A fund has also been established at Cambridge, and steps taken that may lead to a permanent endowment of one or more scholarships.

Secretary Arthur Gilman in his report of the tenth year of completed work (1889) presents the following facts:

The first year began with 25 students, who called for so many courses of instruction that they formed 29 classes, and brought into its service immediately 7 professors, 4 assistant professors, and 12 instructors—23 teachers. The tenth year finds us with 115 students, distributed into 55 classes, and directed by 14 professors, 11 assistant professors, and 16 instructors—41 teachers in all. From the first year to the close of the tenth there has been a continual growth.

The following table exhibits the gradual increase in the number of students during the first 10 years of our operations, and also the income from tuition fees, and the outlays for instruction:

	No. of students.	Tuition fees.	Amount paid instructors.
1879-80	25	\$3,725.00	\$5,171.00
1880-81	47	4,786.25	6,363.32
1881-82	38	5,017.50	6,549.56
1882-83	41	3,899.38	7,778.48
1883-84	49	5,581.25	7,450.20
1884-85	55	7,193.75	8,725.00
1885-86	73	9,661.25	9,400.00
1886-87	90	12,113.75	13,525.00
1887-88	103	13,475.00	13,064.00
1888-89	115	15,460.00	14,575.00

Thirty-two of the students were, during the tenth year, enrolled in the 4 undergraduate classes. Nine were freshmen, 7 were sophomores, 11 belonged to the junior class, and 5 were seniors. To the members of the senior class certificates were awarded at the close of the year, certifying that they had during the previous 4 years "pursued a course of study equivalent in amount and quality to that for which the degree of bachelor of arts is conferred in Harvard College," and had "passed in a satisfactory manner examinations in that course corresponding to the college examinations." At the same time, on the recommendation of the committee of classical instructors of Harvard College, certificates were given to one candidate for final honors in classics, and to two candidates for second year honors in classics.

The secretary says that the number of those who wish to teach is not always great enough to supply the demand.

The number of schools and colleges in which our graduates find opportunities for work is increasing every year, and we may congratulate ourselves upon the usefulness as well as upon the widespread influence of our former students.

Students have come from the following States and islands: California, 1; Connecticut, 3; Hawaiian Islands, 3; Illinois, 2; Indiana, 2; Kansas, 1; Kentucky, 1; Massachusetts, 90; Missouri, 1; New Hampshire, 2; New York, 6; Ohio, 2; Virginia, 1.

The treasurer's report from August 1, 1888, to July 31, 1889, is as follows:

Cash on hand from previous year	\$9. 17	
Students' fees for tuition	15,480. 00	
Students' fees for admission examinations	100. 00	
Students' fees for Harvard examinations	100. 00	
Subscription for the physical laboratory	100. 00	
From income of endowment fund, etc	4,735. 00	
		20,564. 86
Salaries	\$16,475. 00	
Expenses of the Harvard examinations for women	21. 78	
Repairs on Fay House	522. 68	
Service	633. 00	
Laboratories—		
Physical	\$1,557. 27	
Botanical	210. 65	
Chemical	50. 93	
Zoölogical	9. 35	
		1,828. 20
Fuel, gas, and water	392. 61	
Insurance	31. 82	
Printing	301. 62	
Sundries	256. 84	
Cash on hand	101. 31	
		20,564. 86

Subscriptions to the endowment fund, \$1,000.

The following shows the number in the different departments of instruction in the Harvard annex:

New Testament (introduction), 1 class, 9 students.
 Greek, 6 classes, 37 students.
 Latin, 8 classes, 57 students.
 English, 9 classes, 115 students.
 German, 5 classes, 37 students.
 French, 6 classes, 27 students.
 Italian, 1 class, 7 students.
 Philosophy, 2 classes, 29 students.
 Political economy, 1 class, 7 students.
 History, 4 classes, 43 students.

Music, 1 class, 2 students.

Mathematics, 3 classes, 16 students.

Physics, 2 classes, 17 students.

Chemistry, 2 classes, 7 students.

Elementary zoölogy, 1 class, 6 students.

Advanced zoölogy, 1 class, 2 students.

Elementary botany, 1 class, 11 students.

Advanced botany, 1 class, 6 students.

Total, 435 students.

In addition to the rapid growth of the work for which the Annex was specifically established, another advantage has been secured, and that is the building up of a social collegiate atmosphere for the young women themselves, not inferior to that found in the best colleges devoted to the education of women.

The society owns its building and has an endowment of \$100,000. Tuition is \$200 a year. Boone, in his history of "Education in the United States," says that "the Harvard Annex has been called the 'American Girton,' and is said by Professor Goodwin to offer 'better advantages to women than any institution [in this country] offered young men in 1865.'"

Certainly, as was said by the Boston Herald in 1888—

Mr. Arthur Gilman and his coadjutors deserve the greatest praise for building up this "Annex" to Harvard, and the faculty of the university deserve almost equal praise for having fostered a side institution which has fairly shared in the advantages which the first university in New England has to offer to its own undergraduates. * * *

A recent careful study of the methods of procedure at Cornell University shows that there is no diminution of effort in that institution because of the presence of women in the lecture and class rooms. On the other hand, the women are an incentive to the young men, and the influence of the two sexes in their often companion work is found to be wholesome and helpful. * * *

The situation at Harvard has the form of a good-natured siege, in which the race is not to the swift nor the battle to the strong. What is most needed at Cambridge is the continuance of the good sense which has attended the management of this woman venture. Very few mistakes have been made. The women students have had a character to maintain, and their moral earnestness has lifted them to the highest plane of effort. The "Annex" has won friends everywhere, and it has already come to influence the women teachers of the Commonwealth. It is stated that 80 per cent. of the teachers in our public schools are women, and if the "Annex" and Smith and Wellesley are to continue the work which they have broadly and generously undertaken, their combined influence is to be deeply and strongly felt in Massachusetts. * * *

The future of female education is being settled at Harvard with greater freedom and comprehensiveness than, perhaps, at any other point in the United States. The young women are ambitious and earnest, and determined to make the most of themselves. It is easy to see that women of this character, besieging Harvard University for the full liberties and hospitality of the higher education, make their appeal with the voice of victors and the foretaste of conquest.

THE GRADUATE DEPARTMENT.¹

Harvard University has no philosophical department such as is found in the German universities. In 1863 university lectures were established, which were to supply the place of post-graduate studies. These, too, after a trial of 9 years, miserably failed, and President Eliot, in commenting upon it, says: "Advanced students want profound, continuous, and systematic teaching. The university lectures, taken together as a body of teaching, have been discursive, heterogeneous, and disconnected." In 1847, as already stated, an attempt was made to found a school of literature and science for post-graduate study. This was in connection with the Lawrence Scientific School, but the times were not yet ripe for it and the attempt failed.

Up to 1872 the highest degrees in course conferred by the university for nonprofessional studies were those of bachelor of arts and master of arts, and the latter of these had for a long time been given 3 years after conferring the bachelor's degree, and without reference to the completion of any course of study.

In the year just referred to it was first proposed to transform the undergraduate into a philosophical faculty, but it was found that this would necessitate raising the standard of the undergraduate department, and involve an advance of 2 years in the age of the student at the time of admission to college. As the average age was already 18 years and 6 months, this scheme was abandoned by the university boards, and the ground taken that the preparatory studies required should not be of such volume as to prevent students from entering "at an average age above 18." Instead of changing the college faculty into a philosophical, it was decided to establish a graduate department, and the principal features of the system then adopted and still in force are these: The degree of master of arts, which had been merely a nominal degree, and two new degrees—the degree of doctor of philosophy and the degree of doctor of science—were created. These degrees were to be conferred upon the recommendation of the academic council, a body composed of the president, professors, assistant professors, and adjunct professors of the university.

These new degrees, viz, those of master of arts and doctor of philosophy, were to be open to bachelors of art, and that of doctor of science to bachelors of science, bachelors of philosophy, and civil engineering of Harvard University, and also to bachelors of arts, of science, of philosophy, and of engineering of other institutions who shall have satisfied the college faculty or the faculty of the Lawrence Scientific School by examination that the course of study for which they received the bachelor's degree is equivalent to that for which the corresponding

¹This is now merged into the college, and is under the charge of the faculty of arts and sciences.

bachelor's degree is given in Harvard University, or shall have passed such additional examinations as those faculties may prescribe. The successful candidate for the degree of master of arts must pass an examination upon a 1 year's course at the university, and this may be limited to a single department or it may have a miscellaneous character. The candidate for the degree of doctor of philosophy must pass a thorough examination upon a 2 years' course of study, and the candidate for the degree of doctor of science upon a 3 years' course of special scientific study, of which at least 2 must be years of study at the university. However, 1 of the 2 years of residence (not of study) for the degree of doctor of philosophy or doctor of science may be remitted by the several faculties to bachelors of arts or sciences of Harvard University.

The degree of PH. D. or S. D. is given, not for the mere reason of faithful study for a prescribed time or in fulfillment of a determinate programme (even though approved by the faculty), and never for miscellaneous studies, but on the ground of long study and high attainment in a special branch of learning, manifested not only by examinations, but by a thesis, which must be presented and accepted before the candidate is admitted to examination, and must show an original treatment of a fitting subject, or give evidence of independent research.

A candidate for the degree of PH. D. must offer himself for examination in some one of the following departments: Philology, philosophy, history, political science, mathematics, physics (including chemistry), natural history, and music. Within his chosen department he must name some special field of study, approved as sufficient by the committee of the faculty in that department. He is liable to minute examination on the whole of that special field; and is also required to prove such acquaintance with the subject-matter of his department in general as the committee in that department shall require.

A candidate for the degree of S. D. must offer himself for examination on two subjects or fields of study belonging to the range of the mathematical, physical, and natural sciences. He must show special attainments in one of these subjects, and is liable to minute examination in the whole ground which it covers; and he is also required to have such general knowledge in the department to which his special studies belong as the committee in that department shall require. His thesis must embody some contribution to science or some special investigation.

The university publishes an account of the graduate school, which may be obtained on application to the *secretary of Harvard University*. This pamphlet contains a statement of courses offered in the different branches of learning.

The full annual tuition fee of a graduate student is \$150.

A graduate student who pays the full tuition fee is entitled, without further payment, to attend any of the courses of instruction in any department of the university (except exercises carried on in special laboratories), and to be examined in such courses. He has the right to use the university libraries; and, on further payment of laboratory fees, he may attend and be examined in courses of instruction—and, if properly qualified, may be admitted to work—in the laboratories and museums.

During the first years after the graduate department was opened it did not meet the expectations that had been awakened. One reason of this slow development was the fact that the elective system was at that time being rapidly extended, and the students were thus enabled to pursue more thoroughly any chosen branch of study during their college

course. But this variety of choice has continued and so increased that now, at the end of 4 years, the student finds that there are many attractive courses of study offered in the college to which he has not had time to give the least attention. The result is that more and more the number in this department is increasing. The number of students registered in this department in 1888-89 was 99, of whom 51 were new comers, and 44 were graduates of other institutions. Seven candidates received the degree of PH. D. and about 30 that of A. M. In 1889-90 107 were taking graduate courses at Harvard, and of these some 30 were students of philology.

The number of fellowships has increased from 2 to 20, worth from \$450 to \$750 a year; and in addition about 30 scholarships, worth from \$150 to \$350 a year, which were formerly used in the college, have become available in the graduate department. The competition for the fellowships is very keen; for the 11 traveling fellowships 33 persons applied, and for the 6 Morgan fellowships, the incumbents of which must reside at the university, 41 persons applied.

During the year 1889-90 3 new fellowships were established in the graduate department, and Secretary Bolles recommended that this department be taken from the administrative care of the academic council and placed in charge of an active faculty of its own.

One reason why this department has not heretofore enjoyed greater prosperity is that the amount of distinctly post-graduate study has been insignificant, and another is that the candidates for the doctor's degree occupied no position of dignity in the university; they were not even members of a definitely organized department, and had few and unsatisfactory relations with the professors (though it may be said that the great majority of the teachers in arts and sciences took part in the work of the graduate department), whose time was mostly given to the undergraduates. These defects in the former scheme of university life have now been largely remedied. It is to be remembered that these graduate students occupy a position of independence, and can carry on their work with scarcely less restriction than is enjoyed by the officers of the institution. The professors feel that they can be trusted with the conduct of their academic life, and the extension of freedom permitted to them is gradually being propagated downward to the younger men of the university.

SUMMER COURSES OF INSTRUCTION.

The courses of summer instruction at Harvard University, which continue through a period of 6 weeks, were established in 1874, and are under the charge of a committee appointed by the President and Fellows. The object of these courses is to afford students an opportunity of pursuing during the vacations studies in certain subjects which may aid them in their work as teachers or in their preparation for advanced

courses given during term time. During the summer of 1889 courses of instruction were given as follows:

Five courses in chemistry (general chemistry, qualitative analysis, quantitative analysis, organic chemistry, and elementary chemistry).

A course in experimental physics and botany.

Elementary and advanced courses in geology.

Courses in topography, French, German, and physical training.

These summer courses of instruction have increased in number and importance of late years.

Year.	Courses offered.	Persons attending.	
		*Total number.	Teachers.
1886	2	76	44
1887	4	150	88
1888	7	168	102
1889	8	188	116

VOLUNTARY INSTRUCTION.

Classes are also formed for voluntary instruction. For these, instruction in elocution is provided, and also lectures in physics once a week, and in physiology and hygiene once a week. Mathematical discussion is held once a week under the direction of the mathematical professors, and short courses of lectures are given in connection with these meetings. The instructors also assist graduate students in their mathematical reading, meeting them once a week for explanation and discussion. Other students may be admitted to these courses at the discretion of the instructors.

EVENING READINGS, CONCERTS, PUBLIC LECTURES, ETC.

Evening readings, open to all members of the university, and also to the public, are given from time to time during the winter and spring. Selections for these readings are made from the Arabic, Hebrew, and Greek writers, also from the French and German. They are given several evenings in the week from October to April, and the course of readings extends over several years.

Concerts by the Boston Symphony Orchestra in Sanders Theater are also a feature of the winter's entertainment.

Many lectures are given each year under the auspices of the university, or of some of the clubs or societies, most of which are open to the public. These treat of a great variety of topics, the principal being history, archæology, literature, and political economy. Some of them are profusely illustrated. The greater part of the lectures are delivered by specialists in the different fields of human knowledge.

CHAPTER VII.

INFLUENCE OF HARVARD UNIVERSITY IN THE CIVIL WAR.

One has said that "future historians of the college will note that with the development of the national motives which came about in consequence of our civil war the university made another step forward." It is not yet possible to say how much of the advance made since 1865 has been due to the influence which grew out of the war. The increase of wealth and the accumulation of colossal fortunes following the war period have assuredly operated largely to secure the present material prosperity of the institution.

Whatever the reflex influences of the war may have been, there can be no question that from 1861 to 1865 the sons of Harvard bore an important part in national affairs, and acquitted themselves with honor on the field and at home. From no class of men in the Republic did the offer of patriotic service come more promptly than from its college students and graduates, and what was one of the greatest surprises of the war was that these men made the hardest and best soldiers. The Harvard men came in large part from the best families in the land, from such as would in other lands be the titled aristocracy, and it is surprising to note how large a proportion were from Puritan and Revolutionary descent. With them came an admixture of self-made men, who made for themselves an equally brilliant record.

These loyal, enthusiastic, and educated soldiers cast in their fortunes with the war, "not dazzled by the prospect of power or ambition, but governed by solid conviction and the absolute law of conscience." As Colonel Higginson justly says:

It must be an indication that our collegiate education is healthy and sound when it sends forth a race of young men who are prepared at the most sudden summons to transfer their energies to a new and alien sphere, and to prove the worth of their training in wholly unexpected applications. This the Harvard graduates did with noble and unquestioned success, and the story of their memoirs can but give fresh confidence in our institutions and in the American people, as well as in human nature itself.

The collection of facts to illustrate the part taken in the war of 1861-1865 by the students of the college, or of other departments of Harvard University, was begun as early as 1862. Later the corporation and the committee of fifty appointed to build Memorial Hall set about collecting materials for "a fuller and more satisfactory record, which should include



JOHN HARVARD STATUE.



MEMORIAL HALL.

HARVARD COLLEGE.

not only those who died in the service, but also those who offered themselves to the country, yet whose lives were spared." This work was assigned principally to Dr. Francis H. Brown, of Boston, and, through the medium of an extensive correspondence with the alumni of Harvard, he is believed to have collected the names and record "of all students and graduates who served in the Union Army and Navy." These, numbering in all 1,239, he published under the title of "Harvard University in the War of 1861-1865."

A series of memoirs of those graduates and former undergraduates of Harvard College who fell in battle during the civil war, or who died in consequence of services rendered, 95 in number, were published in 1866 by Col. T. W. Higginson.

The impulse given to the university ever since the war seems almost like a consecration from the men who left its walls cheerfully to make secure those political foundations which render all scholarship worthy and enduring. In memory of them, and as a perpetual shrine for the enthusiasm, historic and present, of the university, the pile of buildings, passing under the general name of Memorial Hall, has been raised.

COLLEGE LIFE.

In the earlier years of the present century the college records tell of certain disorders on the part of the students which seem now as a sort of reverberation coming down to us from the seventeenth and eighteenth centuries. For instance, in 1821 the corporation complain to the faculty that it is represented to them "that certain defects are found to exist in the college discipline," and moreover "that more alarming disorders prevail in the moral state of the institution."

In April, 1825, in order to lessen the expense of a college education, the corporation favored the repeal of the regulation which required all the students to board in commons. They had observed "that the morals and discipline of the students have not been unfavorably affected by permitting them to board in private families."

Dating from the period of Kirkland's presidency, the discipline maintained at Harvard began to grow less rigorous, and in time the change became so marked that S. A. Eliot, in his brief history of the college, written in 1848, holds to the view that for 40 years preceding that period it had been as mild as was consistent with the assembling and constant association of two or three hundred young men together for the purpose of study. To him it seemed a difficult matter to show how a milder system could be successfully adopted. It is worthy of note that in 1849 the commons, which had been the occasion of so many college disturbances, were abolished. From that year until 1864 they were not reestablished.

An attempt to classify the students according to merit and proficiency aroused intense feeling for a time in the college community, and many instances occurred of insubordination and resistance. Finally the principle was abandoned, except in the department of modern languages.

Here, as in some foreign universities, the pupils were formed into sections and advanced according to their proficiency, without reference to the distinction of classes.

In the Quarterly Register of the American Education Society for May, 1831, the following item is found:

Military exercises are allowed Tuesdays and Thursdays from 12 to 1 o'clock, or after evening commons, with music not oftener than every other time, and liberty to parade on the afternoons of exhibition days.

This may have reference to the Marti-Mercurian Band, which was founded in 1768 or 1769, and had as its motto "Tam Marti quam Mercurio." The uniform was "the blue coat, skirt turned up, with white cocked hat and top boots." In 1811 this was so far changed that the common black hat and white gaiters were substituted. The company was disbanded by the authorities in 1834.

Though a great advance had been made in the habits and deportment of the students since the beginning of the second century, a hundred years before, or even since the close of the Revolutionary period, still in the year just named there occurred the most remarkable rebellion that the college has ever seen. It continued for the space of two months and was participated in to a greater or less degree by members of all the classes, and it so seriously disturbed the affairs of the college as to become a matter of public notoriety.

In the Quarterly Register for May, 1837, we find the following:

In comparing the present state of the college with that of 50 years ago; if dependence may be placed on written or traditional and verbal accounts it must be admitted that there has been a great improvement both as to its literary and moral character.

The manners of the young men have indeed improved during that period, and society has greatly improved in many respects.

At the close of the Revolutionary war, and for several years after, the moral deportment of youth was not so correct as at a former or at a later period. Discipline was less strict, and two days in the week, Friday and Saturday, were not sufficiently occupied by studies and recitations. But at the date referred to above the requirements for admission had been increased and the curriculum of studies enlarged.

The following picture of Harvard College half a century ago, by Rev. A. P. Peabody, D. D., LL. D., was published in the Harvard Register, February, 1880.

The last half-century can hardly have wrought greater changes, whether superficial or radical, anywhere else than in Harvard College. Fifty years ago a student's room was remarkable chiefly for what it did not have—for the absence of all appliances of elegance and comfort, I might almost say of all tokens of civilization. The feather bed—mattresses not having come into general use—was regarded as a valuable chattel; but \$10 would have been a fair auction price for all the other contents of an average room, which were a pine bedstead, washstand, table, desk, a cheap rocking chair, and from two to four other chairs of the plainest fashion, the bed furnishing seats when more were needed. I doubt whether any fellow student of mine owned a carpet. A second-hand furniture dealer had a few defaced and threadbare carpets,

which he leased at an extravagant price to certain Southern members of the senior class; but even Southerners, though reputed to be fabulously rich, did not aspire to this luxury till the senior year. Coal was just coming into use, and had scarce found its way into college. The students' rooms—several of the recitation rooms as well—were heated by open wood fires. Almost every room had, too, among its *transmittenda*, a cannon ball supposed to have been derived from the arsenal, which on very cold days was heated to a red heat and placed as a calorific radiant on some extemporized metallic stand, while at other seasons it was often utilized by being rolled down stairs at such time as might most nearly bisect a proctor's night sleep. Friction matches, according to Faraday, the most useful invention of our age, were not yet. Coals were carefully buried in ashes over night to start the morning fire, while in summer the evening lamp could be lighted only by the awkward and often baffling process of "striking fire" with flint, steel, and tinder box.

The student's life was hard. Morning prayers were in summer at 6; in the winter about half an hour before sunrise in a bitterly cold chapel. Thence half of each class passed into the several recitation rooms in the same building (University Hall), and three-quarters of an hour later the bell rang for a second set of recitations, including the remaining half of the students. Then came breakfast, which in the college commons consisted solely of coffee, hot rolls, and butter, except when the members of a mess had succeeded in pinning to the nether surface of the table by a two-pronged fork some slices of meat from the previous day's dinner. Between 10 and 12 every student attended another recitation or a lecture. Dinner was at half past 12, a meal not deficient in quantity, but by no means appetizing to those who had come from neat homes and well-ordered tables. There was another recitation in the afternoon, except on Saturday; then evening prayers at 6, or in winter by early twilight; then the evening meal, plain as the breakfast, with tea instead of coffee, and cold bread, of the consistency of wool, for the hot rolls. After tea the dormitories rang with song and merriment till the study bell, at 8 in winter, at 9 in summer, sounded the curfew for fun and frolic, proclaiming dead silence throughout the college premises, under penalty of a domiciliary visit from the officer of the entry, and in case of a serious offense of admonition private or public.

This was the life for 5 days of the week. On Sundays all the students were required to be in residence here, not excepting even those whose homes were in Boston, and all were required to attend worship twice each day at the college chapel. On Saturday alone was there permission to leave Cambridge, absence from town at any other time being a punishable offense. This weekly liberty was taken by almost every member of college, Boston being the universal resort, though seldom otherwise than on foot, the only public conveyance then being a two-horse stagecoach, which ran twice a day; but the holiday could not be indefinitely prologued. The students who were not present at evening prayers were obliged by law to register their names with the regent before 9 o'clock, under a heavy penalty, which was seldom or never incurred, for the regent's book was kept by his freshman,¹ who could generally be coaxed or bribed to "take no note of time."

The price of board in commons was a dollar and three-quarters, or, as was then the uniform expression, "ten and sixpence." The dining rooms were on the first floor of University Hall. College officers and graduates occupied a table on an elevated platform at the head of each room, and the students occupied the main floor in messes of from 8 to 10. The round windows opening into the halls, and the shelves set in them, still remaining in some of these rooms, perhaps in all, were designed for the convenience of waiters in bringing dishes from the kitchen in the basement. That kitchen, cooking for about 200 persons, was the largest culinary establishment of

¹ Every parietal officer had freshmen living under him, who were subject to his order for college errands, and some of whom, like the regent's freshman, performed important services and received an adequate compensation.

which the New England mind then had knowledge or conception, and it attracted curious visitors from the whole surrounding country, while the students felt in large part remunerated for coarse fare and rude service by their connection with a feeding place that possessed what seemed to them worldwide celebrity. They were not the only dependents upon the college kitchen, but shared its viands with a half-score or more of swine, whose sties were close in the rear of the building, and with rats of abnormal size that had free quarters with the pigs. Board of a somewhat better quality was to be had at private houses for a slight advance on the college price, while two or three of the professors received select boarders at the then enormous charge of \$3 a week. This last arrangement, except when known to be peremptorily insisted on by some anxious parent, exposed a student to suspicion and unpopularity, and if one of a professor's boarders received any college honor, it was uniformly ascribed to undue influence catered for on the one side and exerted on the other in consequence of this domestic arrangement.

From what has just been said it may be inferred that the relations between the faculty and the students were regarded, on one side at least, as those of mutual hostility. The students certainly considered the faculty as their natural enemies. There existed between the two parties very little of kindly intercourse, and that little generally secret. If a student went unsummoned to a teacher's room it was almost always by night. It was regarded as a high crime by his class for a student to enter a recitation room before the ringing of the bell or to remain to ask a question of the instructor, and even one who was uniformly first in the class room would have had his way to Coventry made easy. The professors, as well as the parietal officers, performed police duty as occasion seemed to demand, and in case of a general disturbance, which was not infrequent, the entire faculty were on the chase for offenders. Indeed, no small proportion of these breaches of the peace had for their sole object the drawing out of this somewhat grotesque *posse comitatus*, whose maneuvers round a bonfire were wont to elicit not so much silent admiration as shouts of laughter and applause, which they strove in vain to trace to their source.

The recitations were mere hearings of lessons, without comment or collateral instruction. They were generally heard in quarter-sections of a class, the entire class containing from 50 to 60 members. The custom was to call on every student in the section at every recitation. Each teacher was supposed to have some system according to which he arranged the order of his daily calls. Some openly adopted the direct or the inverse alphabetical order, or the two alternately. As for the key to the order adopted by the others respectively, there were generally conflicting theories, the maintenance of which brought into play a keenness of calculation and a skillful manipulation of data fully adequate to the solving of deeply involved algebraic equations. Of course the endeavor—not always unsuccessful—was to determine what part of a lesson it was necessary for each individual student to prepare.

The leading feature of the college at that time was the rich provision made for courses of lectures. It may be doubted whether so many lecturers of an exceptionally high order have ever, at any one time, been brought together in the service of an American college. We had courses on physics and astronomy by Professor Farrar, whom not a few regard as the most eloquent man they ever heard; on technology, by the late Dr. Bigelow; on anatomy, by Dr. John Collins Warren; on hygiene, by Dr. Jackson; on law, by Chief Justice Parker; on French and Spanish literature, by Professor Ticknor; on the canon of the New Testament, by the elder Dr. Ware. It is my belief that, with the then existing materials and means of knowledge, neither of these courses admitted of any essential improvement, and several of the lecturers had extended fame as speakers and writers in the outside world. By far the largest part of our actual instruction was that of the lecture room, where it was our custom to take copious notes, which were afterward written in full, for our permanent use and benefit.

As regards the amount of study and of actual attainment, it was, I think, much

greater with the best scholars of each class, much less with those of a lower grade, than now. I doubt whether such students as used to constitute the fourth quarter of a class could now reach the sophomore year. A youth who was regular in his habits, and who made some sort of an answer, however wide of the mark, at half of his recitations, commonly obtained his degree, though his college life might have been interpolated by an annual 3-months' suspension for negligence; but the really good scholar gave himself wholly to his work. He had no distractions, no outside society, no newspapers, no legal possibility of an evening in Boston, no probable inducement to spend an hour elsewhere than within college walls, and not even easy access to the college library. Consequently there remained for him nothing but hard study; and there were some in every class whose hours of study were not less than 60 a week.

The range of study was much less extensive than now. Natural history did not then even profess to be science, and received very little attention. Chemistry, under auspices which one does not like to recall, occupied and utterly wasted a small portion of the senior year. French and Spanish were voluntary studies, or rather recreations, for the recitation room of the kind-hearted septuagenarian who had these languages in charge was frequented more for amusement than for anything that was taught or learned. Italian and German were studied in good earnest by a very few volunteers. There was a great deal of efficient work in the department of philosophy; and the writing of English could not have been cared for more faithfully, judiciously, and fruitfully than by Professor Channing. But the chief labor and the crowning honor of successful scholarship were in mathematics and the classics. The mathematical course extended through the entire 4 years, embracing the differential calculus, the mathematical treatment of all departments of physical science then studied, and a thoroughly mathematical treatise on astronomy.¹ In Greek and Latin the aim was not so much to determine grammatical inflections and construction as to reach the actual meaning of the author in hand, and to render his thought into perspicuous and elegant English. This aim was attained, I think, to a high degree in Latin; and with the faithful and searching study of the Latin text there grew up inevitably the sort of instinctive knowledge of Latin grammar, which one conversant with the best English writers acquires of English grammar, without formal study. Such grammatical tact and skill were acquired by a respectable number of Latin scholars in every class; and the number was by no means small of those who then formed a life-long taste for Latin literature, and the capacity of reading it with all desirable ease and fluency. Greek was studied with much greater difficulty, and, when with similar, with much less satisfactory and valuable results. We had no accessible Greek-English lexicon. We were obliged to get at the meaning of Greek words through Latin definitions, which often, among several English meanings, left us in doubt which to regard as equivalent to the Greek. The best scholars were often discouraged in the pursuit of knowledge under hinderances so grave, and had resort to translations, or to an interlined copy of the text-book, bequeathed by the more persevering industry of some scholar of earlier date. Several of these interlined copies were always in use, each of them the center of a group of students, while it was well known that the professor had a small library of like copies, which he had confiscated in the recitation room.

These are a few of the many illustrations which I might give of the contrast between the Harvard of to-day and that of 50 years ago; and they may render some help in answering the question whether the former days were better than these; while they may not altogether satisfy the class of persons characterized by those eminent graphic verses:

*Qui redit ad fastos, et virtutem æstimat annis,
Miraturque nihil nisi quod Libitina sacrauit.*

¹ Gummere's, afterward replaced by Farrar's.

In the years which have since elapsed the "influence of wealth and society has specially shown itself at Harvard. Manners have been esteemed highly, and while there have been, as there always must be, exceptions in the very class where one has a right to expect good breeding, the general tone of politeness is high; and along with this refinement of manners goes also a certain aim at refinement of learning, so that there is an absence of spread-eagle in writing and speaking, and an aim at elegance and lightness of style."

GUESTS OF HARVARD.

At different periods in her history Harvard College has entertained as guests some of the most distinguished of American statesmen and scholars. Among them (not to speak of those of more recent years) may be mentioned the visit of Washington in October, 1790, of President Monroe in July, 1817, of General Lafayette in August 1824, and of President Jackson in June, 1833. All these were received at the university by the corporation and overseers, and faculty, and such formal civilities paid them as were thought to be due to the high stations which they filled.

COST OF A HARVARD EDUCATION.

Within one or two decades past objections have been made to Harvard College on the ground that the expenses of the students were unnecessarily great. It is true that the expense of a 4-years' course has increased so that \$600 a year was lately thought to be as small an amount as would suffice for the needs of a student with economical habits.¹ On the other hand it is to be remembered that the pecuniary aid rendered to students of limited means has more than kept pace with this increase.

A new provision was made in 1888-89 for the poorer students at the university. The corporation having occasion to buy the large house on the northeast corner of Oxford and Kirkland streets, granted the use of the whole lower story to a club, called the Foxcroft Club from the name of an old Cambridge family whose estate included the house lot, which was to maintain there reading rooms, lockers, toilet rooms, and a cheap restaurant. The plan has been successfully carried out. A student who can sleep at home need not hire a room in Cambridge; and any student who is forced to economize can procure at the club a luncheon for 10 cents, and a sufficiency of plain food for a day for 35 cents.

A mixed committee of university officers and students regulates the affairs of the club. An economical student need not now pay more than \$300 a year (the long vacation excluded) for tuition, board, lodging, fire, and light, and of this sum the tuition fee makes one-half. The cost of living in Cambridge is lower now than at any time since 1861.

¹ A table exhibiting four scales of annual expenditures (not including the long vacation) names as the lowest sum \$484, and as a very liberal one \$1,360. Prof. C. E. Norton says that the cost of living at Harvard on the "economical basis" may be set at from \$400 to \$475 a year.

ITS RELIGIOUS STANDARD.

Another objection sometimes made, that the college is an irreligious place, can hardly be maintained. It claims, it is true, to be unsectarian, but so also do a large and increasing number of the prominent colleges of the land. The history of college life during recent years shows that an improvement has taken place in the *morale* of the students, and that there is now not only greater respect for religious teachings and teachers, but also greater interest in religious exercises during the week and on the Sabbath. At the same time the college does not consider it within her province to act as the spiritual guide of the students, nor does she endeavor to influence them to favor the doctrines of any particular society.

PHI BETA KAPPA.

This society, which sprung from the soil of college life; was established at Harvard in 1781 by Elisha Parmele, a graduate of the class of 1778, by virtue of an instrument called a "charter," which had been formally executed by the president, officers, and members of the original society, bearing the same name, at William and Mary College in Virginia. The time of the founding of the society antedated by only a few years the establishment of the Harvard chapter. The object of the society was stated to be "the promotion of literature and friendly intercourse between scholars." Its name and motto indicate that "philosophy, including therein religion as well as ethics, is worthy of cultivation as the guide of life." This society took at once a deep root in the university; its exercises became public, and admittance into it an object of ambition; but on the other hand the discrimination which its selection of members made among the students caused some discontent. Its influence, however, was acknowledged to be salutary; that it selected from among the best students is evident from the fact that in process of time nearly all the officers and professors of the college were found to be in its list of members.

The day following commencement was adopted for its annual celebration, and from that time forward in the history of the college the annual oration of Phi Beta Kappa has been given, and the occasions have been marked by a display of learning and eloquence that has "enriched the literature of the country with some of its brightest gems."

SOCIAL LIFE.¹

It has been said that "the influences affecting student life intellectually and socially have altered greatly in the growth of the college, and that which is distinctive of Harvard student life now could hardly be asserted of it within the memory of living graduates." The old time-honored custom of hazing, which had been a prolific source of trouble to

¹ For much here stated the writer is indebted to "Social Life at Harvard," by Prof. Barrett Wendell, and to "Harvard University Illustrated," by Horace E. Scudder.

the college authorities, was finally abolished in 1872. It was brought about in this way:

Soon after the opening of that academic year the freshmen and sophomores prepared to test the respective merits of their classes by charging each other in an open field. During this encounter a number of students were captured by a body of proctors and were liable to suspension from college.

At this point it became generally known that if all the members of the offending classes would pledge themselves to take no part in hazing during their college course a petition for the pardon of the culprits might be favorably considered. The pledge was given, the petition was presented and granted, and hazing at Harvard was at an end, for at the expiration of the 2-years' truce thus declared public opinion had grown to regard hazing as conduct unbecoming a gentleman.

What makes this bit of local history significant is that it marks more clearly than anything else the moment when, under the operation of the elective system, class feeling ceased to be the predominant fact in social life at Harvard. Under the old system the class was the social unit; under the new the social unit is the college.

Indeed, the student may pass through college without knowing so much as the names of many classmates whom he might like extremely if accident once brought them together. Classes still exist. In the freshman year they formally organize themselves, and the organization continues throughout the college course. On graduating they organize themselves afresh and elect a secretary to keep track of all the members and periodically to publish biographical notes.

The college societies are to-day the most conspicuous factor in determining a student's personal acquaintance, and the most marked social line at Harvard is that between the "society" men and the "non-society."

Though non-society men have been known formally to organize themselves on occasions when class politics grew warm, yet the real significance of belonging to one of these societies has never been political.

At Harvard the societies generally include distinctly more than half the students, and those who are unwillingly left out are generally so left on account either of such unavoidable accidents as extreme poverty or of such possibly avoidable ones as aggressive eccentricity.

The societies referred to are strictly Harvard ones, and distinct from the Greek-letter societies common in other colleges. Some of the latter have lately sprung up at Harvard, but they can hardly be said as yet to form an integral part of technically "society" life there.

The college societies seem always to be more or less in keeping with the ostensible end of college life. The institute of 1770 remains practically what it was when formed—a club for debate and declamation, owning also a library much used by its members.

There are clubs whose members are reserved in their statement of the organization, but the day of profound mystery, and dreaded initiations, and owl symbols, has pretty much disappeared. There is a natural history society; a musical society called the Pierian Sodality, of respectable traditions; a glee club, art club, chess club, cricket club, Society of Christian Brethren, and St. Paul's Society, all organizations naturally springing out of the fertile soil of college companionship; but the societies which have the most marked character and the firmest

traditions are the Hasty Pudding Club and the Porcellian, names which indicate, at first glance, a certain amount of conviviality, though the uninitiated would suppose a little pig more satisfying to the *bon vivant* than a bowl of mush and milk. Both societies run back into the last century, and each has maintained steadily a tone of good breeding and good fellowship. They have excellent libraries and agreeable quarters, and offer *rendezvous* for graduates revisiting the college.

In addition to the above there are a number of smaller societies in the college proper, besides the Harvard Union, such clubs as the Finance Club and the Historical Society and the influential societies of the Harvard Law School, and the Boylston Medical Society of Harvard University.

A few of the earlier societies or clubs have ceased to exist. One of these was the so called Medical Faculty, a secret society which turned hazing into a systematic pursuit and mixed with it a good deal of genuine fun and frolic. Another association that was the parent of much sport, but now abandoned, was the Navy Club.

There should also be mentioned the clubs which are confined to no single class, but are supposed to include the few men who are in various ways the leaders of college fashion.

Ten or fifteen at most out of each class of nearly 300 are members of these clubs, which, from all I can learn of them, are respectable counterparts of the more exclusive clubs common in cities.

As a rule they are very tolerable schools of manners, and by no means so favorable to dissipation as many are inclined to believe. If any objection could be raised against them, it would be perhaps on the ground that they are apt to encourage a tendency to luxury and extravagance.

The social position of a student's family has very little to do with his social position in college. There a man of tact and agreeable address is often to be found in a place of far more prominence than is accorded to his people in everyday life; on the other hand, an eccentric man of the most fashionable connections is often nowhere in college. * * * At the club tables the company is selected by mutual agreement. Of the undergraduates now at Harvard, 600 are accommodated at Memorial Hall; a large part of the remainder take their meals at private boarding houses, for at Cambridge there is neither hotel nor restaurant of the better class. Both at the hall and at the private houses there are two kinds of tables—the general and the club. At the former, whoever is willing to pay the price may be accommodated if there is room for him. * * * This great dining room was formerly managed by a steward chosen by the college authorities and responsible solely to them. * * * But a few years ago the whole management of the hall was placed in charge of a committee, consisting chiefly of students, and elected by the students and officers who dine there. This plan has worked admirably; and in addition to the great improvement in food and service, it is worthy of remark that what few cases of discipline have occurred in the hall under this student régime have been dealt with in the most firm and sensible way.

The Hall is managed on coöperative principles, and the cost varies a little from year to year according to the prices of food and the number of

boarders. It is rarely less than \$4 or more than \$5 a week. As already stated a new boarding club—the Foxcroft—has been opened as a coöperative venture of the professors and students, where good meals can be had for from \$2 to \$3 a week, which is from \$1 to \$2 cheaper than the rates at Memorial Hall, which is crowded with students. It had in its opening year a membership of about 120 men.

A community of nearly 2,000 students constitutes a little world of its own. Not half of these are able to secure rooms in the college buildings, and the immediate vicinity of the city of Cambridge becomes, in consequence, a nesting place for many of them.

For many years scholarly societies have existed at Harvard; and their recent growth under the favoring influences of the elective system is a marked feature of modern life there. In many of the college departments—classical, French, Semitic, etc.—there are either independent clubs or what are known as seminars, and are directly under the guidance of professors. In some of these societies—just as in laboratories and in geological field work—a good deal of special work is done, and the excellent technical talk greatly stimulates scholarly interest in the subjects in hand.

Under this head come, too, the college papers, of which there are now four, and which bring together in the conduct of periodicals that I think by no means contemptible most undergraduates of all social ranks who have a taste for literary expression. Here, too, come the Union, where public debates are held fortnightly; and the religious organizations; and the Total Abstinence Society. * * * At Harvard the “Veritas” of the college is so far a true motto that a man who is known to pretend to be better than he is meets once and for all with the contempt he deserves. * * * Exaggerated as reports of dissipation at Harvard may be, however, it would be thoroughly insincere to deny that dissipation exists there—just as it exists anywhere else. All I assert is that vice at Harvard is no way more inherent than it must be in our time wherever a thousand young men, not given to seeming better than they are, gather together. I do not hesitate, however, to declare, after 14 years of intimate acquaintance with Harvard life, my sincere conviction of two facts: it is no rare thing for men to go through Harvard College, in full “society” life, without yielding to the temptations that surround all men on the verge of manhood; and what vice exists at Harvard very rarely develops into a vicious course in after-life. * * * At this moment it can not be denied that the relations between students and officers are not as intimate as could be wished. So far as they go, they are charming: each body treats the other with a courtesy that can hardly be excelled. The elective system, among its other benefits, has worked the destruction of the time-honored hostility that used to exist. A dozen years ago a roomful of students liked nothing better than making an instructor’s life wretched. This was so generally the case during my undergraduate days that when I came to Harvard as a teacher I went to meet my first class in an agony of dread. What met me was what has met me ever since, and what I believe meets every officer of the college. The company gathered to hear what I had to say listened with such courteous attention as would be found at any public lecture. Those who found my teaching beneficial came regularly, with the same unflinching politeness; those who did not find it so were at liberty, within my discretion, to stay away and prepare themselves by outside reading for the examinations that finally tested their knowledge of the subject in hand. This fact not only removed all the zest of misbehavior, but also acted as a most salutary check on me. I did my best to make my lectures worth attending; and in six years I have had no complaint to make, either of lax attendance or of discourtesy. In but a single instance has there been so much as a sign of it.

At the same time, pleasant as the professional relations of students and instructors

are, the great size of the college and the consequently great expense of any formal entertainments prevent these relations from generally becoming more than professional. A few exceptionally good scholars find warm and sympathetic friends in their instructors, and students who are personally introduced to instructors are sure of a cordial welcome. But here the matter ends. * * *

The function of a college is to educate. Its work must in the end be judged by results, and by no *a priori* reasoning. This whole matter of social life is a part—and no small part—of the education which a college student receives.

In many aspects this social life is full of charm; in some it seems at first sight alarming. We are tending, our critics say, as they have said any time these hundred years, to rear a race of good-humored do-nothings, if not worse; and so on.

There is but one answer to this. That is to be found in the Harvard spirit of which I have already spoken. Go where you will and look at Harvard men and the work they are doing in the world. It is not brilliant, perhaps; it may lack the uncompromising vigor that the cant of our day describes as practical. But wherever you find Harvard men in a body you find honest, self-respecting gentlemen, alive in rare degree to the best ideals of their time.

CLASS DAY.

Class day is now the great day of the year, for the old-time glory of commencement has departed.

Its formal investment is in a procession of the class, escorting college officials to Appleton Chapel, where a poem is recited, an oration pronounced, and an ode sung—all productions of members who are appointed by election early in the year. The rest of the day is given up to social entertainment, excepting a brief ceremony near the close of the afternoon, when, at the sound of quick music, the class meets again, wearing the most disorderly hats that can be secured or have been preserved, adorned sometimes with mottoes, figures, and other embellishments, and the more prudent ones dressed otherwise, as for stress of weather or mortal combat. Marching in procession under direction of the class marshal, they move about the college yard, cheering in turn the buildings and the professors and tutors with enthusiasm varying according to their esteem for them, with the Harvard cheer, a barking rah-rah-rah, which, coming from one or two hundred jovial throats, is as near to a Bacchanalian chorus as our New England coast can get. This is followed by the dance around a large elm back of Hollis.

Here they whirl in frantic rings at the close of the long day of pleasure and flirtation, sing the class ode hand in hand, and climb, madly raised on each others shoulders, to clutch at the garland of bright flowers which high up has been wreathed around the mighty trunk, each striving to secure some of the precious flowers to give to some dear fair one looking on in memory of one happy day.

Not long ago class day was celebrated by the graduating class alone draining huge pails of punch in jovial companionship, that not seldom ended in drunken debauch around this same tree; but the class of 1838, to which the poet Lowell, and the sculptor Story, and other congenial souls belonged, took upon them to change all this, and from that day to the present all that is beautiful, and lovely, and fascinating in the fair sex of this vicinage takes part in the joyous festivities of the day.¹

¹ Henry Ware in Appleton's Journal for March, 1870.

COMMENCEMENT.

Time was when commencement was the great holiday of the year, not only for Cambridge and Boston, but, it may be said, for the State. The governor and council came with great parade, tents were pitched on the Common, and the whole surrounding country seemed to precipitate itself into the town. "The holiday," writes Lowell, in his "Cambridge Thirty Years Ago," "preserved all the features of an English fair. Stations were marked out beforehand by the town constables, and distinguished by numbered stakes. These were assigned to the different vendors of small wares and exhibitors of varieties, whose canvas booths, beginning at the market place, sometimes half encircled the Common with their jovial embrace." Only recently, indeed, has it ceased to be a legal holiday, and, doubtless, some ardent sons of Harvard regard the opening of banks and custom-house in Boston on commencement day as little less than desecration of the Sabbath. The long academic procession, formed of the professors, students, and graduates, marched to the church from Gore Hall, its broad doors for once in a year being thrown open to permit the passage, and, the president, wearing the academic hat and gown, sat in the curious old chair, whose origin is lost in the fogs of New England antiquity, and of which Holmes sings so amusingly in his "Parson Turell's Legacy."

The exercises were formerly held in the parish church, but now in Memorial Hall, where, for at least once in the year, extraordinary efforts were made by the unorganized part of the procession to get inside, the rush at other times not being so great as to require police force. The usual parts¹ were taken by seniors, and degrees given, and the whole company of graduates and invited guests sat down to dinner. The day was long the occasion for the graduating class to receive their friends; still, as for more than two centuries, on commencement day the gov-

¹ The basis for the assignment of commencement parts has greatly changed. By the latest "Regulations of the Faculty of Harvard College"—

Any member of the graduating class who has attained grade *C* (78 per cent.) or a higher grade in *eighteen* courses or their equivalent will be recommended for a degree with distinction on the following conditions:

If he has attained grade *A* (about 90-100 per cent.) in *fifteen* courses or their equivalent, or has received highest honors in any department, he will be recommended for a degree *summa cum laude*.

If he has attained grade *A* in *nine* courses or their equivalent, or grade *A* or *B* (about 78-90 per cent.) in *fifteen* courses or their equivalent, or has received honors in any department, he will be recommended for a degree *magna cum laude*.

If he has attained grade *A* or *B* in *nine* courses or their equivalent, or has received honorable mention *twice*, he will be recommended for a degree *cum laude*.

41. The parts at commencement consist of orations, dissertations, and disquisitions, and are assigned in accordance with the following rules:

To every student who receives the degree *summa cum laude*, an oration.

To every student who receives the degree *magna cum laude*, a dissertation.

To every student who receives the degree *cum laude*, a disquisition.

ernor comes out from his capital with a brilliant cavalry escort; still the orations pronounced by candidates for degrees are listened to by a large and distinguished assembly; and still the annual dinner is thronged by the graduates, and every year seems more brilliant, bringing out the wit of Holmes and Lowell, and giving opportunity for earnest words and stirring reminiscences.¹

Lowell has said of the long procession which formerly wound in tortuous folds after the exhibition at the church to Harvard Hall:

Since the academic processions the classes are ranked in the order of their graduation, and he has the best chance at the dinner who has the fewest teeth to eat it with; so by degrees there springs up a competition in longevity, the prize contended for being the oldest surviving graduateship.

It is this gathering together of the old graduates of Harvard which forms one of the essential features of commencement week. It was not until 1840 that the idea was conceived of organizing themselves into an alumni association. Its object was to promote mutual friendship and a closer bond of union, and by its exercises create a new and still more general interest in the annual celebration of commencement.²

HARVARD JOURNALISM.

The *Advocate* was the first newspaper published at the college. Its first number was issued May 11, 1866, and it was thereafter published fortnightly during the college year. It does not, however, claim the honor of being the first publication issued by undergraduates of the college: The *Harvard Lyceum* made its appearance as early as 1810, and from that time until 1864, when "the *Harvard Magazine* sank into a premature grave," Harvard journalism led a fitful existence. During this period five magazines were started, and among their contributors we find such names as those of Holmes, Everett, Motley, J. R. Lowell, and Phillips Brooks. But they were modeled in great part upon the plan of the reviews and literary magazines of the outside world, and lacked a distinctive college tone.

But a new departure in college journalism was inaugurated in March,

42. The appointments for commencement are provisionally made at the beginning of the senior year. The provisional assignment is corrected immediately before commencement; and a list of all parts as finally assigned is printed on the commencement programme.

It will be seen that as now provided the commencement parts are the record for high special attainments in selected branches of study as well as for the average excellence indicated by the general scale.

By the recent regulations, the first of which were introduced in October, 1879, commencement parts have become accessible to a greater proportion of the class.

All who receive places on the commencement-part list are required to write upon subjects previously approved, and from these performances a committee select the small number of actual speakers for commencement day.

¹ H. E. Scudder in *Scribner Monthly* for July, 1876.

² Up to date Harvard has graduated 16,690 students, of whom 6,827 are living.

1866, by the publication of the *Collegian*. Its articles were light and bright, and "intended to represent the views and opinions of Harvard students;" but unfortunately for its continuance the college faculty thought that its tone was somewhat saucy, and its criticisms of college regulations too bold, and placed it, without much delay, under the ban. But the spirit which started the *Collegian* still lived, and at midnight of May 10, 1866, bills were posted in Cambridge announcing the birth of the *Advocate*. It was the *Collegian* under another name. Naturally its advent was not welcomed by a large part of the faculty. A few of the professors, however, as also a number of the graduates outside the college, gave the enterprise their sympathy or support, and the undergraduates were enthusiastic in their advocacy of its claims. It very soon attained to a good degree of popularity, became financially prosperous, and gave at one time generously out of its surplus to the college library. In 1869 its name was changed from *Advocate* to the *Harvard Advocate*. It is published bi-weekly. It has since had some influential rivals which have made serious inroads upon its finances. Such was the *Magenta* (afterwards called *Crimson*), which was started in January, 1873.

Among other Harvard periodicals established have been the *Harvard Register*, an outside venture, which was founded as a monthly in the beginning of 1880 and devoted to the interests of higher education. It was very ably edited for a year and a half, when its publication ceased. The *Harvard Lampoon*, founded in 1876, the first series covering the period from 1876 to 1880, the second series from 1881 ———. Published fortnightly. The *Herald* was founded in 1882. The *Crimson*, founded in 1873, was a fortnightly, like the *Advocate*. It continued until 1883, when it was joined with the *Herald* as a daily. The *Herald-Crimson* became the *Crimson* in 1884. The *Harvard Daily Echo*, first published December 9, 1879, and continued until 1882, was ably conducted, and during its first year printed the largest number of copies of any college paper in existence. The *Harvard Monthly*, volume I, began in 1885-86, and the *Harvard Law Review*, a monthly magazine, was started in 1887, and is edited by the law students. Besides these there is the *Harvard Index* which is a complete university directory. All are still published, except the *Register* and *Echo*. The annual publications of the university are very voluminous. Besides including many scientific and historical papers they treat of the work accomplished in all the various departments.¹

¹Serial publications of Harvard University.

The Quarterly Journal of Economics.

Harvard Law Review. A monthly journal of law published by Harvard law students. Cambridge: Harvard Law Review Publishing Association. \$2.50.

Harvard Studies in Classical Philology.

A volume of about 200 pages will be issued yearly. The first appeared in January, 1890.

PHYSICAL TRAINING.¹

It is generally acknowledged that to do the very best thinking a man must be able to forget his body entirely; and physical training now receives more attention in the leading educational institutions than was ever accorded to it before. Harvard University was one of the leaders in this movement, and the system in force here is probably the most thorough of any in the country.

The influence of athletics upon the students, besides being very powerful, is an influence which works mostly in the right direction. The great recommendation of athletics, the greatest recommendation any system of mental and moral training can have, is that they force those who go into them to be thoroughly in earnest.

At first all athletic and gymnastic work at Harvard was left to the management of the students themselves, but their methods were radi-

Harvard Historical Monographs.

Harvard University Bulletin. Edited by Justin Winsor, librarian. \$1.

Contains extracts from the records of the governing bodies of the university, necrology of graduates, accessions to the university libraries, with special bibliographies and articles of a bibliographical nature. It appears in October, January, May.

Bibliographical Contributions. Edited by Justin Winsor, librarian.

In part republished from the Bulletin. The numbers appear at irregular intervals, averaging from 3 to 6 annually.

Annals of the Observatory of Harvard College. 4°.

Seven parts, aggregating nearly 600 pages, appeared in 1889-90. The records thus published include both astronomical and meteorological observations.

Memoirs of the Museum of Comparative Zoölogy at Harvard College. 4°.

Bulletin of the Museum of Comparative Zoölogy at Harvard College. 8°.

Archæological and Ethnological Papers of the Peabody Museum at Harvard College.

NOTE.—The "Proceedings" of the American Academy of Arts and Sciences is the chief vehicle for the contributions of the chemical, physical, and botanical departments of the university, which often occupy the greater number of its pages. The medical department issues occasionally a volume of papers for limited circulation.

Harvard University Catalogue. 12°.

Contains over 400 pages, giving detailed information concerning all departments of the university. Portions of the catalogue giving necessary information regarding the various departments are also issued separately for free distribution.

Harvard University Calendar.

Contains announcements of lectures and exercises which are open to the public. It appears weekly from October to June.

Annual Reports of the President and Treasurer of Harvard College. 8°.

This volume contains also the reports from the various departments and establishments of the university. The report of the treasurer and those of several of the departments are also issued separately.

Harvard University Examination Papers. 8°.

Separate parts containing papers used at the final examinations in Harvard College, the admission examinations for Harvard College, the law school, medical school, etc.

¹In treating this topic use has been made of an article which was printed in the Boston Sunday Herald, November, 1888.

cally wrong. They gave their attention, as do professional athletes, to the cultivation of sports for which they had special aptitudes, in order to win in contests with other colleges, or in the games which took place in Cambridge between the different classes, or at the annual athletic tournament. There was no gymnasium at Harvard until 1860, when the small octagonal building, which is not now used, was built at the junction of Cambridge street and Broadway. Here the students took their exercise until January, 1880, when the Hemenway gymnasium—named in honor of Augustus Hemenway, of Boston—at that time the largest and best building of its kind in the country, if not in the world, was opened. With the erection of this building came Harvard's opportunity, of which full advantage was taken. Dr. Dudley A. Sargent, a physician who had already won fame by his work at Bowdoin and Yale Colleges, was appointed director of the gymnasium and assistant professor of physical training. Dr. Sargent came to Cambridge in 1879, and the gymnasium was fitted up under his personal supervision with his special appliances. Dr. Sargent follows a system original with himself, which has brought about a revolution in gymnastic work throughout the country. Formerly men were trained in classes. Certain exercises were prescribed for each class, and all its members went through the same course, whether it was suited to their several needs or not. Dr. Sargent conceived and carried out the idea of individualism in physical culture. A student who wishes to enter the gymnasium must first be examined. He is stripped and the different portions of his body are measured according to a most intricate system, in order that the relative size of the different parts may be accurately ascertained, and the amount determined of the work that he ought to be required to do. The director of the Harvard University gymnasium undertakes not only to develop muscles, but to lengthen bones in cases where the subject has not reached the age of full development.

After the measurements have been taken, the capacity of the lungs and the strength of the different parts of the body are tested by appliances provided for these purposes, and then the student is required to answer certain questions as to his history and that of his parents and grandparents.

One thing that has already been settled is that college boys who have been well nurtured, and who have descended from ancestors that were also well fed and well clothed, are far ahead of those in mercantile life in physical development.

Before the subject of the examination is allowed to dress he is photographed from three different positions—front, back, and side. These photographs furnish a highly interesting study, showing, as they do, that the individuality of a person's figure is as marked as that of his face.

After the examination is completed the figures obtained by it are used in working out a chart, showing at a glance the exact degree of devel-

opment of every part of the person examined. These charts are very important, for not until they have been made can any idea of what work is required of the pupil be obtained. They are also of great use in the researches that are being made by Dr. Sargent. By making composites of them he expects to show the effect of different occupations, modes of life, places of residence, etc., upon physical development. One fact has already been established—that mental degeneracy is always accompanied by loss of physical power.

When the exact needs of the student have been ascertained, he is given a book in which the exercises that he requires are marked. He is told not only what apparatus to use, but how to use it—whether his movements should be rapid or slow and how long they should be continued. He is also told what exercises to avoid, and given minute directions as to diet, sleep, bathing, and the clothing he should wear both winter and summer. Nothing is neglected that can conduce to his strength and health, and, consequently, happiness, usefulness, and long life. Most of the students conscientiously follow out the course prescribed for them.

The tendency of all boys, and men, too, for that matter, to develop some special muscle of which they boast, is carefully guarded against. The students are rapidly being convinced that what they need is not this special training in some particular line that they used to be so anxious to obtain, but symmetry of form, brought about by rational exercise and proper methods of living.

The work in the gymnasium is not compulsory, but 87 per cent. of the members of the university are examined, and regularly use the apparatus. There are only about 150 or 200 athletes at Harvard, but there are 1,200 men using the gymnasium. So popular has the department of physical training become that the gymnasium, the largest in the country when it was opened in 1880, has already been outgrown, and complaints have been made by students that they have been unable to get a chance to exercise there when they desired to do so.

Few people realize how thorough is the system of physical training in force at Harvard, but what has been told above will give some idea of it. Fewer yet appreciate the important results which have been accomplished. One fact alone will give a slight indication of the advance made. Last year there were 22 students in the university that showed a higher development than the strongest man in 1880, the year when the gymnasium was opened and when the system of examination was begun. No student is allowed to enter as a competitor in any athletic sport or join as an active member any college athletic club, including baseball, football, cricket, lacrosse, and rowing associations, without a previous examination by the director of the gymnasium and his permission so to do. Thus no man has been allowed to row whose arms and back were strong enough to help the college or his class to victory but whose lungs and heart were so weak that the exertion would do him a

permanent injury. He has been working to make the students what might be called "all-round athletes," not for the sake of winning victories but for the good it will do the individual to be strong and healthy, and his attitude in this matter is precisely that of the whole faculty. The gymnasium is not intended for any particular class, but for the great mass of students whose physiques need improvement, and the training and encouragement received here have induced many men to enter into the sports who otherwise would have nothing to do with them. Thus the mental and the physical work go hand in hand, and some of the leaders in the college classes are among the leaders in the gymnastic work.

That the scholarship of the college has not seriously suffered from the growth of athletics is shown by the steady rise in the average standing of the graduating classes during the past 11 years. * * * While new sports have been added and the number of participants has largely increased, the average standing has risen from 67½ to 73 per cent.

The bathing arrangements are complete, and the dressing accommodations ample.

Facilities for recreative exercise have been provided in the bowling-alleys and ball-court, and in the rowing, fencing, and sparring rooms.

The gymnasium is open to all students of the university on week days from 11 a. m. until 1 p. m., and from 3 until 5:30, and from 8 until 10 p. m., except on Saturdays, when it is closed at 6 o'clock.

In submitting Dr. Sargent's exhaustive report for 1888-89, President Eliot says:

The athletic sports and intercollegiate contests demonstrate their general utility, and set in a clear light the improvements of the average physique of the students which the gymnasium and the various sports have together brought about. There are still many excesses and evils connected with athletic sports, as intensified by intercollegiate competition; but the faculty take comfort in the general physical improvement which they witness in the average student; and they hold that dyspepsia is less tolerable than a stiffened knee or thumb, and that effeminacy and luxury are even worse evils than brutality.

The catalogue of 1889-90 devotes a number of pages to the athletic facilities of the university. The Hemenway Gymnasium, the Astor-Carey athletic building, the new Weld boat house, and the new Norton athletic fields are briefly described. The annual report of the president and treasurer says:

The means of prosecuting athletic sports and healthy exercises at the university were considerably increased in 1888-89. Two new ball fields were provided to the eastward from Divinity Hall and the Divinity Library, the university contributing and grading part of the land, and the Norton estate leasing the remainder for 5 years. All charges for and upon the leased land, including taxes, are to be borne by the athletic organizations of students.

Ever since 1882 the president, the director of the Hemenway Gymnasium, the faculty, and the successive committees which have endeavored to regulate athletic sports, have been insisting that all college sports should be strictly amateur sports; but not till the current year (1889-90) has there been any indication that this fundamental principle has been thoroughly accepted by the undergraduates and graduates of Harvard or of any other college, so far as baseball and football are concerned.

BASEBALL.

There is no authentic record of a baseball game previous to 1845. In Harvard no organization for the practice of baseball existed until December, 1862, when some members of the freshmen class organized a class nine. In June of the following year the first intercollegiate game was played between the Harvard and Brown University clubs. In the spring of 1865 the university nine was determined upon, and its first game was played in June of that year with the Trimountain club of Boston. The practice ground was first the Common near the Washington Elm, then the "Delta," now partially covered by Memorial Hall. But in 1867 the bases were removed from this to Jarvis Field, which had been given to the college for athletic sports. From that time on the Harvard club played intercollegiate games with Yale, Princeton, Dartmouth, besides games with some of the foremost local clubs in the land, and made for itself a brilliant record. Of late years, since the establishment of professional players, less interest has been taken by the university in the maintenance of its baseball prestige.

FOOTBALL ASSOCIATION.

The football association was founded in 1873, but took no prominent part in the college athletic sports until 1874. The association is chiefly supported by subscriptions from the students, and is at present in a flourishing condition. Holmes Field, south of Jarvis Field, is the plot of ground set apart for football, and the games here, with one exception, have been played according to the Rugby rules. Harvard men have played a large number of games with clubs from various parts of Canada, but in none of these contests has a victory been gained over Harvard, though in some cases the games have been drawn. Its contests, however, with college football clubs in the States have not resulted in such uniform success.

The mock football match between the sophomores and freshmen, with its "brutal degradation of a noble sport," which was once quite an event in college life, has long since been a thing of the past.

BOAT CLUBS.

The history of the Harvard boat club dates back to the fall of 1844, when 13 members of the junior class bought the "Oneida," an eight-oared barge, and organized the Oneida Boat Club. But a great impetus was given to the rowing fever by the race rowed with Yale on Lake Winnipiseogee in 1852. From that day the interest steadily increased, not in college only but outside, to glorify the pursuit of bodily strength.

The "Harvard College Regatta," later known as the "Class Races," was instituted in 1865. About that time a regular system of training was adopted, and English rowing manuals were carefully studied and the style of stroke changed accordingly. As a result for the next 5

years Harvard carried off the university prizes at the intercollegiate races.

In 1869 the Harvard University Boat Club was formed, and one year later the present constitution was adopted. In 1871 a vague system of intercollegiate races was instituted by the formation of the "Rowing Association of American Colleges," and for a few years a large number of colleges entered the races, the highest number, 13, being reached in 1875. This association has since suffered dissolution.

To the Harvard University Boat Club were joined four subclubs, and to each subclub was assigned a precinct in which its members must reside, but this system did not prove to be wholly satisfactory, and a more close connection was made again with the University club.

Of late years the "varsity," as it is called, has not been so successful as formerly in its annual contests with Yale. Various reasons have been assigned for this loss of prestige. One writer, friendly to Harvard, says:

Yale is superior to Harvard in one very important respect. At Yale there is a more earnest spirit than at Harvard. It pervades the whole college, and is one cause of her success in athletics. It is more the fashion at Yale than at Harvard to mean business.

The trouble with Harvard College to-day is that it is not the fashion among the students to be in earnest about anything.

It is doubtful, however, whether this view is held by any large number of the friends of Harvard.

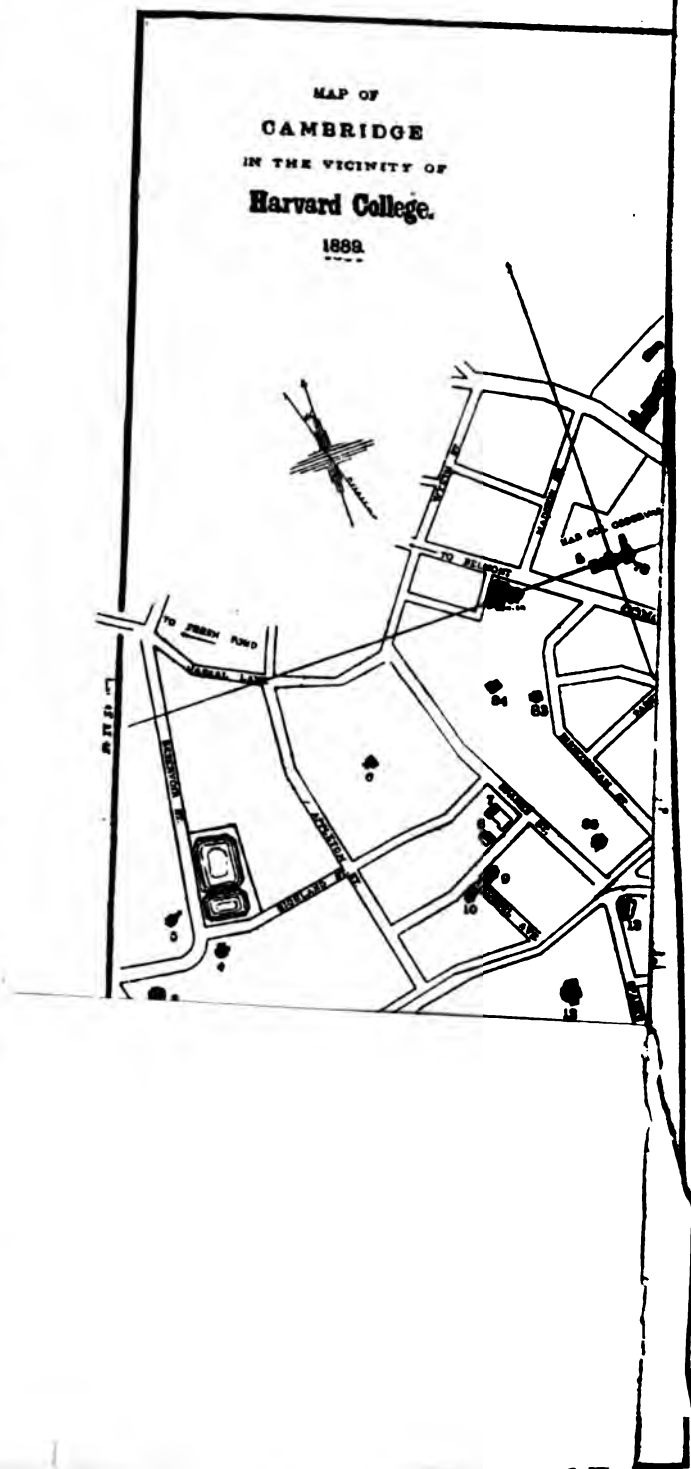
Certainly the system of training the crews is now more perfect than ever before. Class crews are generally formed as soon as a class enters college, and they practice on the river through the college year, except from the last of November to the first of March, and during that interval they daily row on the hydraulic machines and run several miles. They are constantly coached by some famous Harvard oarsman.

The club has an excellent boathouse, which was repaired and fitted up by the college in 1876. Aside from the University Club there is the Lawrence Boat Club of the scientific school.

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CHAPTER VIII.

SKETCH OF THE PRESIDENTS OF HARVARD.

Even more important to the permanent establishment and prosperity of the first American university than the devotion and rare liberality of its friends has been the character of the men who have presided over it and guided its destinies. During the first hundred years they were not simply the first men of their time, but such were their merits that most of them would have been distinguished for learning and piety in any period of our history. Of the first, Henry Dunster, we have already written; a man of a sweet Christian spirit, faithful to every trust, brave in the midst of almost countless discouragements, and intensely loyal to every interest of the college during 14 years of unappreciated work. Upon him the responsibility was placed of laying the foundation of the college so that a great edifice might be built thereon, and to him it was given to frame a charter and regulations for the government of the college, and extend what help was possible to needy students who sought his aid. Harvard College may well be proud of its first president, while it sorrows over the intolerance of an age that made him one of the earliest martyrs in our land to the principle of free thought and speech. The Rev. Charles Chauncy, who was chosen to succeed him, had been educated at Trinity College, Cambridge, but had years before come to America on account of persecutions suffered in England for his religious teachings. He had successively filled the chairs of Hebrew and Greek in his alma mater, and was spoken of as a "thorough, accurate Hebrician, Grecian, and Latinist, and well skilled in all the learned sciences;" he was also widely known as a profound theologian. He was already far past the prime of life when called to the presidency of the young college, and his wide experience as pastor and teacher, added to great natural abilities, made him probably superior to Dunster in scholarly attainments, but he was cast in a different mold from his scrupulous and high-minded predecessor, and could secretly hold doctrinal views which he did not think prudent to proclaim openly. Samuel A. Eliot says that "the temperament which led him first to resist oppression and then yield to it—now to decline being silent and afterwards to consent—was very peculiar in that age, however common in later days, and one would think it little adapted to command the respect of the unbending fathers of New England." Still, in spite of this assailable spot in his character, the college greatly

prospered during the 17 years of his presidency. He was a man to be esteemed by his contemporaries and to have his memory revered by his pupils. One of these refers to him as "this venerable old man," and another, Dr. Increase Mather, as "that most illustrious Chauncy, whom we may justly call 'Carolus Magnus.'" Peirce says that "he was a star of the first magnitude in a brilliant constellation of New England worthies," and was "equal to the first characters in theology in all Christendom and in all ages."

From the death of Chauncy until now all the presidents have been graduates of the college, but of these only two during the first century achieved more than the ordinary success which attends faithful and meritorious service. They were Increase Mather and John Leverett. When Dr. Mather assumed the presidency in 1685 most of the Puritan leaders who founded and established the colony had passed away, and in their places were born Americans, who were distinguished for that spirit of enterprise and independence by which their descendants have since been known. The most influential among these were graduates of Harvard College, and the one who perhaps most fully embodied the spirit of the time was Increase Mather, its sixth president. In him were united the educator, the preacher, and the politician. A man of great force of character, of wonderful personal influence, of strong religious feeling, of scholarly habits, and unbounded faith in himself, he was also not without bigotry and superstition. A loyal adherent to the rigid doctrines of the fathers, he became the natural leader of the opposition to the new and more liberal theological party which grew up in college and church. As president of the college he increased its endowments and secured for it generous friends in England, but he never, save for a few months near the close of his administration, lived in Cambridge, nor did he devote much time to the instruction and discipline of the students. Giving due credit for all his services to the college, it would still seem to be true that to these we are not to look for his credentials to fame, but rather to his political services to the Massachusetts Colony, and to his long and successful pastorate of the Old North Church.

But in John Leverett the college found a president who met the requirements for this high office. Years before he had been a faithful instructor in the college, and later he had acquired fame as a legislator and as justice of the supreme court of the colony. It is generally held that successful instructors are not the best managers of the financial affairs of literary institutions; that it is wiser to allow them to spend the income than to be intrusted with the care of the property of the college. But Leverett united in himself the talents of the experienced man of business and of the wise and popular instructor, and from 1707 to 1724, while its affairs were under his careful management, the college enjoyed continued prosperity. But his success, as stated elsewhere, was won in spite of the influence of a powerful faction which, as well

by active opposition as by petty acts (such as persuading the general court to grant a salary inadequate to his support), sought to embarrass, and, if possible, to remove him from office. The corporation of the college were happily upon his side, and acted in harmony with his plans; but the hostility which pursued him throughout his entire administration wore upon a not over rugged constitution and hastened his death, which occurred in May, 1724. His associates unite in the warmest expressions of love and reverence for him. In a funeral discourse the Rev. Benjamin Colman says: "His morning, which we do but just remember, was so bright that it seemed to us even then the noon of life." Forty years ago we "beheld him esteemed highly * * * by those that were his fathers in age, and as for us we revered, feared, and loved him as if he had been gray in the president's chair." Another says that he was "a great and generous soul"—a great divine, politician, and statesman—"few or none understanding the times and seasons and what ought to be done better than he." He was the counselor to whom the people came "for information and advice." Perseverance, courage, steadiness, and resolution of mind—a spirit born to rule—were traits evident to all who knew him. "His speech, his behavior, and his countenance carried such majesty and marks of greatness in them * * * as struck an awe upon the youth."

As "a scholar and a man of science," President Leverett became widely known, being the first in America to receive the honor of membership in the Royal Society of England.

The benefits springing from Leverett's work flowed on into the next administration, and in President Wadsworth's¹ prosperous term, which closed the first century, we see gathered the rich fruitage of the toils, sacrifices, and faithful devotion of the early presidents of Harvard College.

EDWARD HOLYOKE.

The choice of Holyoke as successor to President Wadsworth was one eminently fit to be made. When a young man he had been associated in the government of the college 4 years as tutor and 3 as fellow of the corporation, and he had not only filled these positions acceptably, but he had approved himself a very superior officer. He was "urbane in his

¹ Benjamin Wadsworth (1690), who left the pastorate of the First Church, in Boston, to encounter many hardships and trials as president of Harvard College, held some theological opinions which are not current in these days. In a sermon preached in 1711, he says very simply: "'Tis of the mere undeserved mercy of God that we have not all of us been roaring in the unquenchable flames of hell long ago, for 'tis no more than our sins have justly deserved." Again, he says that "nothing is more grating, cutting, and enraging to the devil than to have the gospel faithfully preached to men." But when Dr. Wadsworth, in a sermon entitled "The Saint's Prayer to Escape Temptations," told parents how to bring up their children, he gave advice good for all time, which the latest as well as the earliest president of Harvard College might gladly adopt as his own.—President Eliot, at the two hundred and fiftieth anniversary of the First Church, in Boston.

manners, faithful in duty, neither obstinate nor flexible in temperament." "His religious principles coincided with the mildness and catholicism which characterized the government of the seminary." He was "too much of a gentleman and of too catholic a temper to cram his principles down another man's throat" (see Quincy, pp. 6 and 7). His election, therefore, with the liberal tendencies which he openly showed, may be taken as an indication of the state of religious parties at the time. Holyoke's administration proved to be eminently successful, and the 32 years which it covered—the longest period that the president's chair has been filled by the same occupant—were among the most prosperous in the history of the college. To this result he contributed largely. His learning was extensive, his judgment sound, his manner dignified but without the appearance of vanity, his temper firm and gentle. He was not, apparently, "deficient in any of the good qualities which are requisite to make a good president." With such qualifications he naturally gained the esteem of his contemporaries, and left behind him the memories of his virtues and of his wisdom. One thing which added greatly to his popularity was his liberality in contributing to the pecuniary resources of the institution and the rendering aid to deserving students. Blunt in his manners, there was always under cover of it a genial spirit. On public occasions he was remarkable for his dignity (see S. A. Eliot, pp. 76-77). His long and eventful service to the college was brought to a close by his death in June, 1769.¹

SAMUEL LOCKE.

Near the close of 1769, after two elections and declinations (though Eliot says, p. 77, that he was the first person chosen and that the election took place in March, 1770), a new president was found in the person of Rev. Samuel Locke. He was the pastor of a small parish about 20 miles from Cambridge, and was the youngest candidate ever chosen to that position. His contemporaries represent him as a man of fine talents, a close thinker, possessing an excellent spirit and generous, catholic sentiments, and as being a warm friend of liberty. His greatest defect seemed to be that, as he had lived somewhat withdrawn from the active world, his culture was not as broad as that of many others of his day.

After a service of 4 years he resigned his chair in December, 1773. Little that is worthy of record has been preserved either concerning his life or his administration of the affairs of the college. His resignation was sudden and voluntary, and the reason of it seems to have been some moral delinquency, but what the nature of his offense was the

¹ In the graveyard beside the Congregational Church, erected in 1833 at Cambridge, are the tombs of Dunster, Chauncy, Oakes, Leverett, Wadsworth, Holyoke, Flynt, and many more who have been connected with Harvard College as officers, teachers, and students. (See speech of Edward Everett at the two hundredth anniversary of the college, as quoted in Quincy's History, vol. 2, p. 651 *et seq.*)

historian of the college does not divulge, and hence we are left to conjecture alone.

SAMUEL LANGDON.

The first president of Harvard College who was not a resident of the Province or Commonwealth of Massachusetts was the Rev. Samuel Langdon, of Portsmouth, N. H. His administration extended from 1774 to 1780, and was very successful, though these eventful years were undoubtedly the most dubious, distressing, and turbulent in the history of the colony or State. His conduct amid difficulty and danger was characterized by zeal, activity, and fidelity, and the reports of the visiting committee speak always of the satisfactory state of the college. Suddenly, in August, 1780, he resigned his office, giving as a reason therefor that the cares of the university were becoming burdensome to him. Without experience he had ventured to accept the office when every prospect was discouraging, the country in distress, the college embarrassed. His duties had been far different from those which in times of peace appertain to the official head of a college, but "he had reason to hope that during his administration he had accomplished somewhat for the advancement of religion and literature." Such was the language accompanying his resignation. Aside from this there is some contemporary testimony to show that his action was induced (or precipitated) by a combination of students to whom he had become obnoxious, and that this rebellious conduct received encouragement from some who were connected with the government of the institution. His biographers say of him that he was somewhat lacking in dignity, and in the judgment and spirit essential to one who would administer successfully the affairs of a college. That there was no valid charge brought either against his character or his administration is evident from the very complimentary resolutions passed by the students upon the announcement of his resignation. Dr. Langdon was afterwards the successful pastor of a church in the vicinity of Portsmouth, N. H., and died at an advanced age in 1797.

JOSEPH WILLARD.

The successor of Dr. Langdon was the Rev. Joseph Willard, who was installed in office December 19, 1781. President Willard was distinguished as a scholar and divine, and for his conduct of the university. He took the chair at a trying time, when the spirit of discipline was weak and the college seriously embarrassed. But under his administration the discipline improved, many important changes were made in the course of study, the finances greatly increased, and the institution was rendered prosperous and free. Throughout his connection with the institution he enjoyed the entire confidence of his associates in the faculty, the respect of the students, and the approbation and support of the public.

The more eminent associates of President Willard were Dr. Wiggles-

worth, Dr. Tappan, who succeeded to the divinity chair, Samuel Williams and Samuel Webber, Hollis professors of mathematics; Stephen Sewall and Eliphalet Pearson, Hancock professors of Hebrew and other oriental languages; Drs. John Warren and Aaron Dexter, the medical professors.

SAMUEL WEBBER,

who was chosen president upon the declination of Fisher Ames in 1805, and who had already had a service of 17 years in the college, was destined to fill only for a short period the higher office to which he had been called, as his death occurred on the 17th of July, 1810. Though not gifted with those brilliant powers which fascinated the contemporaries of Fisher Ames, he was withal learned, faithful, industrious, and devout; in short well qualified for the high office which he had been called to fill. Having spent his early life upon the farm he lacked somewhat of that easy dignity of manner which characterized his predecessor; but he was urbane and gentle, his administration was popular and successful, and he was well liked both by his students and by the public. Mathematics was his favorite study. Eliot says that "he was efficient in government and much respected by those whom he directed, and those with whom he coöperated. His tenure of office was not long enough to enable him to make radical changes in the conduct of the college, or any very deep impression upon the public mind. The grants from the legislature and the readiness with which contributions flowed into the treasury indicate, however, that the college during his administration enjoyed a high degree of public favor.

JOHN THORNTON KIRKLAND.

The election of President Kirkland was considered a very auspicious event for the college, and fortunately the high anticipations raised were not destined to suffer disappointment. Though many causes doubtless combined to produce the remarkable growth of Harvard College during his administration, still it must be maintained that a large surplus of the increase and prosperity of the college is to be "referred to the direct influence of the clear head, the warm heart, the genial manners, the wisdom, and the virtues of Dr. Kirkland. He commanded the respect of his associates, the ardent attachment of his friends (and they were of the wisest and best of his time), and a peculiar sort of fondness, so to speak, of the students. Never even in time of college disturbances did the students fail to exhibit respect and love for the president." His was a nature that called for the deepest affection and reverence, and ever in after years was his memory cherished as one of the precious recollections of their lives.

Dr. Kirkland was chosen to the office in August, 1810. He was at the time pastor of the new South Church in Boston, where an opportunity had been afforded to form intimate acquaintanceship with the most intellectual and public-spirited men of the city who then took the lead

in public affairs. The confidence of those men he had fully gained, and they gave to his administration of the college a uniform and hearty support. The period of his presidency must be considered remarkable in many particulars. This was alike honorable to him, to the officers associated with him, and to the community in which he lived. Not only were the number of students and instructors greatly increased, but higher qualifications were demanded from both. This, it may be said, especially distinguished the early period of his administration. The standard of scholarship and the general cultivation of mind which he introduced have since come to be regarded in no inconsiderable degree as the proper characteristic of a course at Harvard. Under him there was specially noticeable a marked improvement in the style of English composition. This must be accounted for, in part at least, to his own brilliant discourses wherein his thoughts were clothed in such clear and brilliant language. The numerous benefactions to the college at this period were the result in great part of his strong personal influence, uniting itself with an enlightened liberality which was already being manifested in the community. Thus it came about that new departments of instruction were opened, two new professional schools added, and a third, which had been founded earlier, greatly enlarged. Additional apparatus was secured, new buildings erected, private benefactions multiplied, and for the first time in nearly 30 years a liberal grant of money obtained from the legislature. During the 17 years of his administration the college received in donations and bequests nearly \$400,000. This was relatively a large sum and surpassed in amount the increase of the college property for any similar period until the opening of President Eliot's administration. This success was obtained not by reason of his financial ability, for in this he was apparently lacking, but because of his elevated character and personal magnetism. The defects of Dr. Kirkland's nature are described as "carelessness about details and a physical indolence which led him to neglect minor matters."

Doubtless Dr. Kirkland's success must be attributed in part to the spirit of the time, which was most favorable to improvements, but most of all to the eminent men who then formed the board of corporation, and placed implicit confidence in the president and vested him with such unprecedented powers in the management of the institution. On account of ill health he resigned the presidency in April, 1828, but lived for more than 12 years afterwards, his death occurring in 1840, when he was in his sixty-ninth year. Josiah Quincy was chosen his successor on the 2d of June, 1829.

JOSIAH QUINCY

was born in Boston February 4, 1772, and was the son of Josiah Quincy, jr., whose name is associated with those of Otis and Warren as among the first of our Revolutionary heroes. A graduate of Harvard College in 1790, he soon entered upon public life, and as State senator and member of Congress he became a prominent and efficient member

of the Federal party. He was one of the first, if not the first, among northern men to denounce the slaveholding interest as a rising and dangerous tyranny. After a service of 8 years in Congress he retired at his own desire, in 1813, to private life; but a citizen whose service had been so valuable to the Republic could not hope to remain in retirement. He was, therefore, in the same year elected a member of the State senate. From this time until 1822, when he took the office of judge of the municipal court of Boston, he served the State as senator or representative, and during the last two years as speaker of the house. In 1823 he was elected mayor of Boston, which office he held until 1828, when Harvard University called him to its highest office. Into this office he was inducted in June, 1829, and entered upon his work with that indomitable energy which characterized him throughout life. The office of president, which he filled to the great satisfaction of the friends of the college, he resigned in August, 1845. One of the most notable events of his administration was the celebration in September, 1836, of the second centennial of the founding of Harvard College. The paper that he prepared for the occasion upon the history of the college and university was afterwards elaborated into a work of two volumes, and has ever since remained the standard history of Harvard University.

One has said of him that "he was as prompt, as unwearied, and as punctilious in the discharge of his duties as president of the university as he had been in every previous public trust," and that during his term of office (only five have been longer) he instituted a system so perfect that the college still lives by it, as it might do for a century to come.

His administration will be remembered best for this, that he improved the discipline of the college, gave a new impulse to the law school, secured the building of Gore Hall, and founded the astronomical observatory. Eliza Susan Quincy, his daughter, writing as late as 1880, says:

I have always considered the establishment of Harvard Observatory by Mr. Quincy as the crowning distinction of his 40 years of public life.

In his latter years he wrote much, and published a number of works, mostly historical. The last of his political acts was in connection with the Presidential campaign of 1856, when he used his utmost endeavor to secure the election of General Fremont. He died in Quincy, July 1, 1864. The best biography is by his son Edmund Quincy, published in 1867.

EDWARD EVERETT

was born in Dorchester, November 11, 1794. When only a little more than 13 years of age he entered Harvard College, and at 17 was graduated therefrom with the first honors of his class. As a literary writer he soon took a leading position, and at 20 he was one of the most attractive pulpit orators in Boston. But his tastes were then as always those of a scholar, and he soon resigned his ministerial work to accept the Eliot professorship of Greek in Harvard College. Preparing himself by long years of study in Europe, he entered with alacrity on his

duties, and for 5 years gave a vigorous impulse to the work in his department of the Greek language and literature, as well as quickened by his example the work in other departments.¹

From this time on, as editor of the *North American Review*, as political and historical lecturer, as member of Congress, governor of the Commonwealth of Massachusetts, and United States minister to England, his fame became national, and his name linked with the greatest which our country has produced.

Shortly after his return from England in 1845 the presidency of Harvard College was vacated by the resignation of President Quincy, and Everett was strongly urged by the overseers and other friends of the institution to accept this office. This he did in January, 1846. It was a position very congenial to him, in harmony with the early associations of his life, and one which seemed to promise a large opportunity of applying for the benefit of the rising generation the fruit of his matured studies, and his varied experiences in life. But, unfortunately for the college, he was compelled at the close of the year 1848, on account of the serious impairment of his health, to resign the office, which during 3 years of a devoted and faithful administration, he had filled with equal distinction and usefulness.

Upon the death of his friend Webster, in 1852, he was named by President Fillmore, Secretary of State, and held that post for the remaining months of Fillmore's administration. From that time on, as United States Senator, as Vice-Presidential candidate, as the greatest orator of the nation during the years preceding as well as in the dark days of the civil war, he was ever before the public eye, and by his learning, zeal, and eloquence, rendered a service to the national Government that was of inestimable value and made him *facile princeps* among the civilians of his time.

A subject in which he took great interest in his later years was the purchase of the estate at Mount Vernon. To accomplish this cherished object he gave public lectures, and by this and other means raised over \$100,000, and thus assured the success of the undertaking. Among his published writings are "The Life of Washington," 1860; and "Orations and Speeches on Various Occasions," 4 vols., 8vo, 1869. His death occurred January 15, 1865, in commemoration of which event there was published a "Memorial from the city of Boston," and also the "Proceedings of the Thursday Evening Club."

JARED SPARKS,

widely known as an American historian, was born at Willington, Conn., May 10, 1789. After his graduation from Harvard in 1815 he studied theology at Cambridge, and for 2 years, 1817-19, was college tutor in mathematics and natural philosophy. In the latter year he was ordained as minister of a Unitarian congregation in Baltimore, and in 1821 elected

¹ I heard Emerson say "Edward Everett's coming from Germany was an immediate and profound influence in New England education."—W. B. Weeden.

chaplain of the United States House of Representatives. In the same year he established the "Unitarian Miscellany and Christian Monitor," which he edited until 1823. He then resigned his pastorate, and, removing to Boston, purchased the North American Review, of which he continued sole proprietor and editor for 7 years.

From the beginning of his career he kept his pen actively employed, and few of his contemporaries surpassed him in industry, or published works of such permanent historical value as those which he wrote during the period from 1821 to 1854.

In 1839 Mr. Sparks accepted the McLean professorship of history at Harvard College. This position he held for 10 years, and gave an impetus to this long-neglected study, the influence of which has ever since been felt.

In 1849, upon the resignation of Edward Everett, he was chosen to succeed him in the office. His election to the presidency was most favorably received, since he had the approbation of the community at large, the fond appreciation of the immediate friends of the college, the respect of the faculty, and the love of the students.

His was a brief administration, hardly long enough for the full development and experimental trial of any peculiarity in the purpose, aims, or method of the president, but still it had many strong points.

He made the president's office what it had not been before, an office whose functions, many of them still trivial, all had more or less direct bearing on the education or moral well-being of the students.

He created the regent's office, and drew the distinction between its duties and those of the president. In fact he made the latter office what it has continued to be, viz, the balance wheel in the complicated machinery of the college. President Sparks was noted for his kindness, and for his generous and sympathetic interest in poor and struggling students, who were particularly attracted to him. He was earnestly desirous of extending the privileges of the university to the greatest number. This, whether wise or not, was openly his policy and boldly advocated. In every department of the university the power of his character was profoundly felt. He alone of all the presidents of Harvard since the earliest days of the college was in the habit of attending recitations and lectures. He made it a rule to attend at least one exercise, sometimes several, each term in each class in the several departments. Thus he informed himself of the condition of every department of the university, and at the same time brought himself into intimate personal relations with every officer and teacher.

President Sparks resigned, in 1853, the office which he had filled with such signal ability, and devoted his later years largely to historical writing, the work which was most congenial to him. He died in Cambridge, Mass., March 14, 1866. A biography of him by Dr. George E. Ellis was published in 1869.

REV. JAMES WALKER

was born in Burlington, Mass., then a part of Woburn, August 16, 1794. After his graduation at Harvard in 1814 he studied theology in Cam-

bridge, and from 1818 to 1839 was pastor of the Unitarian Church in Charlestown. From 1831 to 1839 he was editor of the *Christian Examiner*. In the latter year he was chosen Alford professor of moral and intellectual philosophy in Harvard College. From this position he was raised to the presidency in 1853, and continued at the head of the college until 1860.

Among his published works, besides his lectures on natural and revealed religion, are two memoirs and two volumes of sermons and public discourses.

There can be no doubt that whatever else Dr. Walker was or might have been he was born to be a preacher and possessed all the qualities of mind and heart and all the physical gifts which fit a man to be a great preacher.

No other recognition of his services gave him so much satisfaction as the assurances which he continued to receive from the young men that his preaching had done them permanent good. He was a man of commanding presence and often of majestic manner, and this added much in giving impressiveness to his pulpit discourses and great weight to all his utterances to the students. By his intellectual preferences, his even temper, and his interest in young men, he was well qualified to fill the Alford professorship, to which he was at first chosen. The students found in him both teacher and friend, and sought his advice not only in respect to their studies and their troubles, but also in the choice of their career in life, and when he was made president of the university he was welcomed to the office by the unanimous voice of the students and friends of the college. In this position he admirably fulfilled the expectations of all.

Dr. Walker believed in common education, but the education which he wished to make common was the best education. Wherever the highest intellectual gifts were found he would have them put in the way of the highest intellectual culture. * * * To this end they should be taught something about a good many things, but everything about at least one thing. Before all systems of instruction he placed character, as character alone would enable the young to profit by the many accidental circumstances which schools and colleges do not create and can not prevent.

No former president when entering upon this office had understood better than he its responsibilities, and no one, of all, administered its affairs with greater assiduity and impartiality, or was rewarded by more decided marks of public confidence. The personal attachment of the students, which he had formerly enjoyed, he retained as president, and at the same time he won the undivided support of all his associates in the various offices of instruction and government. During his presidency there was a rapid increase in the number of students and in the facilities for instruction. Among other improvements the Appleton Chapel, Boylston Hall, and the Gymnasium were built, and the Museum of Comparative Zoölogy was founded.

At his death, which occurred in Cambridge December 23, 1874, he left his valuable library and \$15,000 in money to the college.

For biographical sketches see discourse by Rev. Henry Wilder Foster, January 3, 1875, and account of services at the dedication of a mural

monument to James Walker at Harvard Church, Charlestown, January 14, 1883, also "Sketch of his Life" in a pamphlet.

CORNELIUS CONWAY FELTON.

The twentieth president of Harvard College was born at Newbury, Mass., November 6, 1807, and died at Chester, Pa., February 26, 1862. He was graduated from Harvard College in 1827, and 2 years later received the appointment of Latin tutor. In 1830 he was transferred to the Greek tutorship, and in 1832 became college professor of Greek. This was followed 2 years later by his election to the Eliot professorship of Greek literature. In addition to his other duties he was for many years regent of the college, an office which President Sparks had created.

Beginning in 1833 with the publication of an edition of Homer with English notes and Flaxman's illustrations, he brought out in succession a number of editions of Greek authors, choosing especially those plays of the Greek drama and comedy which are read in the schools. His pen was also very active in other ways, and many literary works and enterprises with which his name was not connected owed a large portion of their merit and success to materials which he furnished, or to his advice, revision, or criticism. Few men have attained so high a position in one department with so generous a culture in all. While he was unsurpassed in the Greek language and literature, to the study of which his life had largely been devoted, he was also versed in the modern languages, acquainted with the natural sciences, had a fine eye and a delicate taste for the beautiful in art, and in fact was deficient in scarcely any branch of learning.

President Felton is represented by his life-long friend as "pure, true, and kind, manly in strength of purpose, yet childlike in his transparent simplicity, genial in his intercourse with all. His fraternal sympathy with the students; his tender consideration for those who were struggling as he had struggled; his readiness to sacrifice his own ease to aid them in their work made him beloved by the students during their stay at Harvard, and stimulated them to nobler ambitions after they had left college halls.

In the summer of 1860, by the concurrent voice of all friends of the college, he was chosen president. In this high position, with a firm purpose to raise the standard of that ancient university in everything that was good and noble, he added much to the reputation he had already won. Although of a nature so mild and affectionate, and disliking above all things to give pain to others, yet when occasion demanded it his firmness and vigor as a disciplinarian were admirable, and few have pursued with more thoroughness to a successful termination what they deemed necessary reforms.

But it was in social life that President Felton particularly excelled. Rarely has any one in the wide ranks of the scholars of our land "borne a more benignant and endeared part than he sustained in the whole in-

tercourse of friendship and society, with equal wit and wisdom, modesty and dignity, grace in his speech and vigor in his thought; the cherished companion of those who merely sought to while away a happy hour, the valued instructor of the most advanced and earnest minds, the sympathizing fellow-counsellor in every noble and generous work for human progress and well being."

In 1856 he was elected a Regent of the Smithsonian Institution, which position he continued to hold with the affectionate regard of every member of this establishment until the time of his death.

A little less than 2 years after his elevation to the presidency of the university a disease of the heart, which had long manifested itself, assumed an aggravated form, and he died at the house of his brother in Chester, Pa., February 26, 1862. He was, at the time, on his way to Washington to attend a meeting of the Regents of the Smithsonian Institution. The funeral discourse by Dr. A. P. Peabody, and the eulogy by President T. D. Woolsey of Yale College, are eloquent tributes to his character, and indicate the cherished place which he held in the esteem of his contemporaries.

REV. THOMAS HILL

was born in New Brunswick, N. J., January 7, 1818, and graduated from Harvard College in 1843, and from the divinity school in 1845. He was settled in the same year as pastor at Waltham, Mass., where he remained 14 years, but continued to devote much study to mathematical problems. Among other publications he issued the following: "A Treatise on Arithmetic," "Geometry and Faith," and "First Lessons in Geometry." However it was as an investigator in curves that he displayed the greatest originality and fertility. By his discoveries he added to the number of known curves, and simplified their expression, and by introducing new combinations he vastly extended the field of research. Dr. Hill was recognized as one of the foremost investigators and adepts in various departments of natural science, and also as an accomplished classical scholar, being especially conversant with the Hebrew and cognate Oriental languages.

In 1859 he was chosen to succeed Horace Mann as president of Antioch College, at Yellow Springs, Ohio, and, in 1862, when the civil war crippled that institution and forced it to suspend, he accepted the presidency of Harvard University. This office he resigned on account of ill health, in 1868. During the winter of 1871 he served in the Massachusetts State legislature, and somewhat later accepted a call from the First Parish Church in Portland, Me., over which society he was installed in May, 1873.

Dr. Hill's literary labors have been mostly of a fugitive character, and have consisted principally of contributions in prose and verse to various periodicals, and papers printed in the Proceedings of the American Association for the Advancement of Science, with occasional addresses and sermons; a little tract on Natural Theology, and the few volumes of mathematical text-books to which we have referred.

CHARLES WILLIAM ELIOT.

Charles William Eliot was born in Boston March 20, 1834. He was the only son of Samuel Atkins Eliot, treasurer of Harvard College from 1842 to 1853. He was prepared for college at the Boston Public Latin School, and was graduated from Harvard College in 1853. The following year he was appointed tutor in mathematics, but while filling this office he continued the study of chemistry in the laboratory of Prof. J. P. Cooke. In 1857 he delivered a course of lectures on chemistry at the medical school in Boston, and in the following year he was promoted to the position of assistant professor of mathematics and chemistry, the grade of assistant professor being then first created.

In 1861 Professor Eliot was placed in charge of the chemical department of the Lawrence Scientific School, and relieved of his duties as mathematical teacher. In 1863 he went to Europe, where he spent the two following years in the study of chemistry, and in acquainting himself with the organization of public institutions in France, Germany, and England. While in Vienna, in the summer of 1865, Mr. Eliot received and accepted an appointment as professor of analytical chemistry in the Massachusetts Institute of Technology, which was then being organized in Boston under the charge of Prof. William B. Rogers. After he had held this professorship for 2 or 3 years he again visited Europe and, studying mostly in France, remained for a period of 14 months. In the spring of 1869 he was elected president of Harvard University, which position he has since filled. Of his administration during the more than 20 years that have passed, it is not too much to say that it has been one of extraordinary brilliancy and of a prosperity heretofore unknown. More than ever in the past, the fame of the university is national, and the name of its president known and honored throughout the Union.

Besides two manuals of chemistry and certain memoirs on chemical subjects, his printed works are confined mostly to essays on educational topics, and to his annual reports as president of the university.¹

¹*Presidents of Harvard College and terms of service.*

Henry Dunster, 1640-1654.

Charles Chauncy, 1654-1671.

Leonard Hoar, 1672-1674.

Urian Oakes, 1675-1681.

John Rogers, 1682-1684.

Increase Mather, 1685-1701.

Samuel Willard, 1701-1707.

John Leverett, 1707-1724.

Benjamin Wadsworth, 1725-1736.

Edward Holyoke, 1737-1769.

Samuel Locke, 1770-1773.

Samuel Langdon, 1774-1780.

Joseph Willard, 1781-1804.

Samuel Webber, 1806-1810.

John Thornton Kirkland, 1810-1828.

Josiah Quincy, 1829-1845.

Edward Everett, 1846-1849.

Jared Sparks, 1849-1853.

James Walker, 1853-1860.

Cornelius Conway Felton, 1860-1862.

Thomas Hill, 1862-1868.

Charles William Eliot, 1869-1909.

The average service of the presidents of the college and university has been a little less than 11 years.

THE CLOSE.

The earliest and latest presidents of Harvard represent the best culture of the age which they adorn. The position which the university holds to-day indicates not alone the advance made in educational methods and in scientific appliances and discoveries, but also emphasizes the difference between the civilization of our time and that of 250 years ago. In the gradual change that has taken place progress has been made in one or more of four principal directions: In amplitude of instruction; in freedom in the choice of studies; in better arrangement and coördination of studies within single departments; and in *morale*. Further than this, Harvard is no longer an institution of the State nor is she under the control of any religious sect, nor yet devoted to the instruction of young men alone.

The trend of our time towards specialization encourages the spirit of individualism in the university, but, though the faculties embrace men of such widely different intellectual tastes and tendencies, it is noteworthy that there is a unity of purpose evident in all departments, and a "real institutional loyalty." Finally, after more than two and a half centuries, we may well claim that the noble purposes of the clergy and laity, the founders of New England and of its institutions, have not failed. "The light first kindled by the munificence of Harvard has spread onward to our own time, illuminating the course of our fathers and concentrating a brighter radiance on the paths of their children."

The grand old trees which dot the yard "are not more securely rooted in the soil than is Harvard University grounded in the thought and life of New England and of the country at large, in the shaping of which it will have in the future, as it has had in the past, a most powerful influence."

Near Memorial Hall "was recently set a charming statue of John Harvard. The young clergyman sits in his chair, his pulpit robe thrown around him, his book open on his knee, his thin face and tranquil, hopeful eyes looking toward the western sky. He is thinking of the days that are to be. He hears nothing of the vigorous tide of life now flowing round his chair. He knows nothing of past success or present attainment. His face shows no trace either of self-distrust or of self-satisfaction. But the quiet unconsciousness with which his trustful hope looks towards the west is something good to see, and is typical of the college life to-day."

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In addition to the bibliography herewith presented and much other historical matter not named, there is offered to the historiographer of Harvard University a very large collection of occasional addresses, treatises, and papers upon all the varied subjects which, especially in this century, have had to do with the different departments of the university.

NOTE.—Since the completion of this history in March, 1890, probably the most notable event connected with the affairs of the University has been the reorganization of the college, the graduate department, and the scientific school. Where formerly these three groupings of students, all studying the same kind of subjects, were in charge of three independent bodies, apparently distinct, but really identical in individual constituents, now all three are in charge of one body. This body is now called the faculty of arts and sciences, but if its membership be analyzed it is found to contain all the members of the old college faculty, all the members of the old scientific school faculty, and all the members of the old academic council that ever had any direct connection with the graduate department. The graduate school, as it is now called, is brought to the front. Of the forty or fifty new courses of study presented by the faculty of arts and sciences this year, nearly all are for graduates. Another large block of college scholarships has been turned over to the graduate school for present use. The distinction is now clearly defined between liberal studies and professional studies. There is simply one department, which is called the department of arts and sciences, in which the humanities, the arts, and the sciences will be developed as far as the resources of the university admit. As now arranged the instruction in the department of art and sciences is unbroken from the beginning of the freshman year to the approval of the thesis of the successful candidate for Ph. D. The graduate school is evidently destined to be one of the "great bodies" of the university.

Looking over the lists of members of the various departments, it appears that all have gained since last year, 1889-90. The total increase is 192 students and 25 teachers. The gain in the law school is one of the most noticeable. Five years ago the school had only 150 members; to-day it has 279. No one doubts that this gain is mainly due to the efforts of the Harvard Law School Association, so ably organized and managed by Mr. Brandeis, Mr. Wade, and their associates.

Beginning with the academic year, 1891-92, there is to be given a special course in methods of instruction, which are adapted to the purposes of teachers and of persons intending to be teachers. The courses are open to graduates of colleges or scientific schools, or men known to be of suitable age and attainments under the same conditions as govern admission to the graduate school. The members of these courses will be under the supervision of a special committee of the faculty, and after passing satisfactory examinations in any part of the work deemed sufficient by the faculty, they will receive certificates of the work actually done. The instruction offered relates to the history, theory, and art of teaching, and to the methods of elementary teaching in the following topics: Greek, Latin, English, German, French, history, mathematics, physics, chemistry, geology, botany, zoölogy, and geography. A course of lectures in each of these topics, by instructors belonging to the department in question, will form the basis of the instruction, and in addition, candidates will be required to perform special tasks, as indicated in the announcements of the various courses, as practical exercises, conference and attendance upon courses of instruction already included in the general list of those offered by the faculty.

The gifts to the University continue in an ever-flowing stream, and amount to about \$500,000 annually. The objects of these gifts are singularly various, and all interesting. They reach out to every department and affect to a greater or less degree all the members of the University.





CHAPTER IX.

WILLIAMS COLLEGE.

By REV. EBEN BURT PARSONS, D. D., *Secretary of the Faculty.*

THE FOUNDER—THE FREE SCHOOL.

Williams College, at Williamstown, Berkshire County, Mass., was chartered in 1793. The town and the college were named in honor of Col. Ephraim Williams, who had command of the forts in the Hoosac Valley, and was killed in a battle with the French and Indians, September 8, 1755. By his will he established a free school in the township which was to bear his name. The most advanced students of this free school became the first college class, numbering 4, and received the regular degree of bachelor of arts in the autumn of 1795.

The small amount left by the will of Colonel Williams was carefully managed for 30 years by the executors, and they then obtained permission from the State legislature to carry out the benevolent purposes of the testator. The fund for building was increased by individual subscriptions, and by the avails of a lottery, which the general court granted for that purpose. The building which is now known as West College was then erected for the use of the free school, and was finished in 1790. It was a notable building for those times, a brick structure, 82 feet in length, 42 feet in width, and four stories high, crowning a hill that overlooks much of the adjacent country, even to the mountains that rise on every side.

THE ADMINISTRATION OF PRESIDENT FITCH.

The free school was opened in 1791, with Rev. Ebenezer Fitch, a graduate of Yale College, as preceptor, and Mr. John Lester as assistant. The school at once became popular, attracting the youth from considerable portions of the three States that meet at the northwestern corner of the township. The success of the school was so great that the next year the trustees asked the legislature to incorporate the school into a college. This was done, and a grant of \$4,000 was made from the State treasury for the purchase of books and philosophical apparatus. The college was put under the care of 12 trustees, who elected Preceptor Fitch the first president of the college, fixed the terms of admission, and named the first Wednesday of September as commencement day. The number of trustees was afterwards made 17. For admission to the

college the candidate must be "able accurately to read, parse, and construe, to the satisfaction of the president and tutor, Virgil's *Æneid*, Tully's Orations, and the Evangelists in Greek;" or, if preferring to become acquainted with French, to be "able to read and pronounce with a tolerable degree of accuracy and fluency, some approved French author." President Fitch, with one tutor the first year, and with three the second year, constituted the faculty. As West College inclosed chapel, library, recitation rooms, studies, and dormitories, so the president was a whole corps of instructors in manifold subjects. In 1795 the catalogue was printed, with the names of 77 students.

The immediate success of the institution induced the State to grant two townships of land in Maine for another college building. This land was sold for \$10,000, and in 1797 East College was built upon another commanding elevation. It was a brick building, four stories in height and in other dimensions considerably larger than West College. The second college building marked the bounty of the State, as the first stood for individual beneficence. And these two buildings served all the purposes of the college for many years.

The teaching force during the administration of President Fitch, in addition to the work of the president himself, consisted in all of 3 tutors and 3 professors. Some of the tutors became eminent in after years. Jeremiah Day became president of Yale, Henry Davis became president of Middlebury and of Hamilton, Asa Burbank had a prominent part in organizing the Berkshire Medical School, and Barcroft Fowler was a professor in Bangor Theological Seminary. The first professorship established in Williams College was in the French language. From 1795 to 1799 Samuel Mackay filled that place. The professorship of mathematics and natural philosophy was established in 1806, and Gamaliel Smith Olds, a graduate of the college in 1801 and a tutor in it from 1803 to 1805, became the first incumbent. He remained 2 years, and in 1810 Chester Dewey, a graduate of the college in 1806 and a tutor in it from 1808 to 1810, followed as professor. He served here 17 years, and in later years had much to do for the University of Rochester. The professorship of law and civil polity continued only from 1812 to 1815, and Daniel Dewey, the leading lawyer of the town, was the only professor in that department.

There were 460 graduates during the 21 years of Dr. Fitch's presidency, making an annual average of nearly 22. Two hundred of these graduates were lawyers, from whose ranks Mills and Ashley went to the United States Senate, Williams to the office of governor in Vermont, Williams, Pettibone, Betts, Morell, Kellogg, Dewey, Paige, and Birdsall to the most eminent places of the State judiciary, and 16 more were members of the United States House of Representatives. And men notable in other ways were Eaton the naturalist, Hale the editor, Edwards the president of Andover Theological Seminary, Childs the president of the Berkshire Medical School, and Bryant the poet.

Midway in this administration, in the summer of 1806, was the so-called "Haystack Prayer-meeting," which was the beginning of the American foreign missionary activity. Five young men, Mills, Richards, Loomis, Robbins, and Green, were in a secluded field consulting with each other upon their duty to preach the gospel in heathen lands. A passing shower caused them to take shelter under a haystack, which thus assumed historical significance, and the success of those young men in accomplishing their purpose has given to the college a special missionary prominence in all its history. A marble shaft, surmounted by a marble globe on which is sculptured in bold relief the similitude of a haystack rises from the midst of "Mission Park" and marks "the birth-place of American foreign missions."

THE ADMINISTRATION OF PRESIDENT MOORE.

After a long and prosperous administration Dr. Fitch resigned the office of president and accepted a pastorate in West Bloomfield, N. Y. On the same day that the trustees accepted his resignation, May 2, 1815, they elected Dr. Woods, of Andover, as their first choice, and Professor Moore, of Dartmouth, as their second choice, for the presidency. The former declined and Prof. Zephaniah Swift Moore was inaugurated president, September 3, 1815. He was a graduate of Dartmouth, and had but little acquaintance with the college to which he was called. The question of removing the college to some more accessible place in the valley of the Connecticut River became at once the absorbing topic when it was found that the new president favored such removal. And though the decision of the trustees was against removal, yet the effect of the controversy was demoralizing, the number of students decreased, and after 6 years of discouraging work Dr. Moore, taking a few students with him, "withdrew from the Berkshire college and bent his steps toward the hills of Amherst."

The teaching force during this administration consisted of the president, who filled the chair of theology, Prof. Chester Dewey, who continued in charge of mathematics and natural philosophy, Prof. Ebenezer Kellogg, who taught the Greek and Latin languages, and seven tutors. No new buildings were erected.

Ninety men graduated in the six classes of this administration, an average of fifteen a year. Some of the noted names upon the college roll call of this period were Governor Washburn, of Massachusetts, Jonas King, the missionary, Emmons, the geologist, Chancellor Benedict, of New York, Dr. Davis, the vice-president of the college, Dorus Clarke, the divine, the editors Hallock, and Dr. Sabin, friend and trustee of the college for half a century.

Not much is known of the progress of learning in the college during the presidency of Dr. Moore. One writer says:

The atmosphere of the institution was too warlike for the placid pursuits of literature. *Inter arma silent litteræ et leges.*

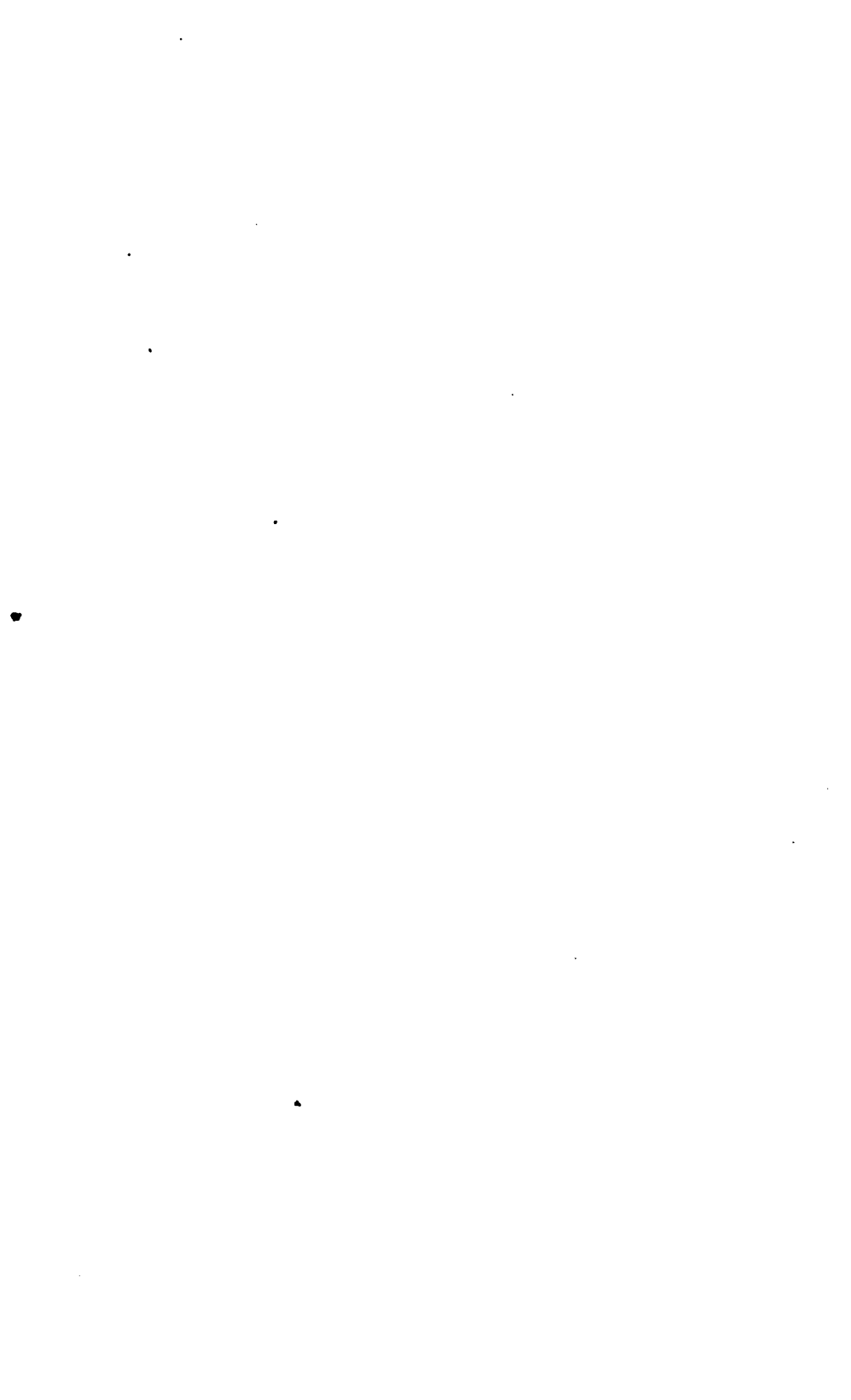
THE ADMINISTRATION OF PRESIDENT GRIFFIN.

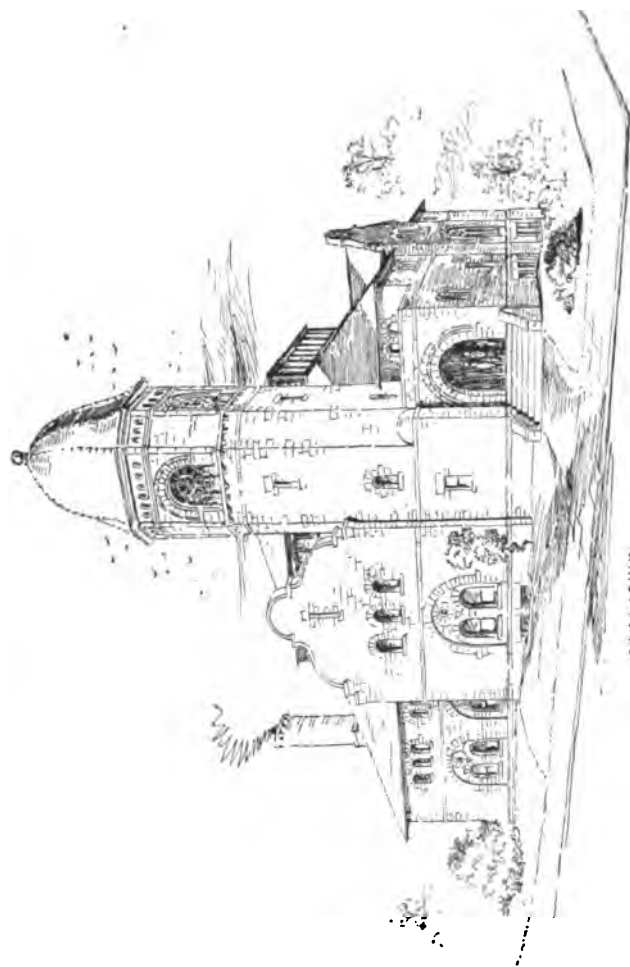
In this time of sore trial for the college a man of rare powers was found to take the leadership. Rev. Edward Dorr Griffin, D. D., a graduate of Yale in 1790, a man of vigorous proportions in body, mind, and spirit, was elected to the presidency. He was attracted by the missionary history of the college, and, accepting, was inaugurated November 14, 1821. Confidence in the future of the college was so fully restored that \$25,000 were at once raised, a fine brick building, now called Griffin Hall, was erected for a chapel, and the affairs of the college were every way improved.

Williams College has had the credit of doing several *first* things, two of which came into this period. To help the college in its emergency the Society of Alumni was organized in September, 1821. It was the first of its kind in connection with any college and has proved a useful organization in keeping the graduates acquainted with the needs of the college and in sympathy with its progress. This society holds an annual meeting the day before commencement, and by the courtesy of the board of trustees has the election of five members of that body. Another *first* thing was the sending out of a scientific expedition in 1835 to study the plant and animal life of Nova Scotia. Other and longer expeditions have been made by the college in later years.

In the teaching force of this period President Griffin filled the chair of theology, and several new departments were established. Professor Kellogg held the chair of Greek and Latin during the whole of the administration. The new chair of moral philosophy and rhetoric was taken by William Augustus Porter, a graduate of the college in 1818, and a tutor in it from 1819 to 1821. He died in 1830, and was followed by Mark Hopkins, who afterwards became president of the college. In mathematics and natural philosophy Prof. Chester Dewey was followed in 1827 by Sylvester Hovey for 2 years, and then by Albert Hopkins. In 1833, Ebenezer Emmons, a graduate of the college in 1818, became professor of natural history and retained the work till 1859. From that time till his death, in 1863, he was in charge of mineralogy and geology. In 1835, Joseph Alden was made professor of rhetoric, political economy, and history, and remained till 1852. For the same period, from 1835 till 1852, Edward Lasell held the chair of chemistry. With these professors during this administration there were associated 21 tutors, some of whom became eminent in their educational work; the Hopkins brothers, at Williams; Yeomans, the president of Lafayette; Benedict, the chancellor; Sheldon, the president of Colby, and Calhoun, the missionary.

After 15 years of most arduous service, President Griffin resigned and returned to Newark, where he died November 8, 1837. During his presidency of 15 years there were 311 graduates, a yearly average of nearly 21. Of those graduating during that period Mark and Albert





GYMNASIUM
WILLIAMS COLLEGE MASS

Hopkins, Nathaniel Herrick Griffin, and John Tatlock became permanently connected with the college as educators; while Joseph White, secretary of the Massachusetts Board of Education, and for 30 years treasurer of the college; David Dudley Field, the lawyer; Samuel Irenæus Prime, the editor, and William Hyde, the banker, as friends and trustees of the college, were closely identified with its history. Many notable names are found in the college catalogue of that period, and the marked characteristic of the administration is the number of graduates who became ministers. Of the 311 graduates 148, or nearly one-half, were clergymen. Some classes were more than half on that side, and in one class, 1827, there were 23 clergymen in a class of 30 men. Nothing could more perfectly illustrate the persistent religious pressure of the mighty man of God who gave his best and ripest days to the college.

THE ADMINISTRATION OF PRESIDENT HOPKINS.

There was providentially an Elisha to receive the mantle of the departed Elijah. Mark Hopkins, a graduate of the college in 1824, a tutor in it from 1825 to 1827, a graduate of the Berkshire Medical School in 1829, the professor of rhetoric and moral philosophy from 1830, was elected to the presidency and was inaugurated September 15, 1836.

The next year an astronomical observatory was built, largely by the efforts and at the expense of Prof. Albert Hopkins, the first observatory permanently connected with any college in this country devoted wholly to this purpose. East College was burned October 17, 1841, and there was no insurance. The next year the present east and south college buildings were erected. In 1846 the library building, Lawrence Hall, was put up with money given by Amos Lawrence, of Boston. In 1847 Kellogg Hall was built as another dormitory, with recitation rooms on the lower floor. In 1855 Nathan Jackson, of New York, built Jackson Hall for the lyceum of natural history. Three years later he bought the Whitman place for the president's residence and endowed a professorship in theology. In 1859 the stone chapel, with alumni hall, was dedicated. The money for building it had been raised by subscription. In 1865 a stone building of the mixed Gothic style was erected for use as a gymnasium and to afford laboratories and recitation rooms for chemistry and physics. This was called Goodrich Hall, after the donor, John Z. Goodrich, of Stockbridge. At the time of high prices and unsettled affairs, caused by the war, the State gave the college \$75,000 on condition that an equal sum should be raised by the friends of the college. This was done by the personal solicitation of the president.

The teaching force of this period was a strong one. President Hopkins taught moral and intellectual philosophy, and for half a century made those subjects the attractive center of the college life. For 20 years he taught all the studies of the senior year, and during his whole presidency he taught the greater part of those studies. His brother,

Prof. Albert Hopkins, a graduate of the college in 1826, a tutor in it from 1827 to 1829, continued to be professor of mathematics and natural philosophy from 1829 to 1838, then filled the chair of natural philosophy and astronomy till 1868, and of astronomy from 1868 till his death in 1872. A vigorous man, an enthusiast in his work, the interpreter of nature, a man of prayer, the builder and supporter of a church in a neglected district of the town, he made a deep and abiding impression upon the college. John Tatlock, a graduate of the college in 1836, and a tutor in it 2 years, was professor of mathematics from 1838 till 1867. In 1846 Nathaniel Herrick Griffin, a graduate of the college in 1834, and a tutor in it one year, became professor of Greek and Latin. In 1853 the work was divided, and he retained the Greek department till 1857. He became librarian in 1856, and continued in that service till his death in 1876. Isaac Newton Lincoln, a graduate of the college in 1847, was professor of Latin and French from 1853 till his death in 1862. In 1857 John Lemuel Thomas Phillips, a graduate of the college in 1847, became professor of Greek, and remained till 1868. In 1877 he became librarian and served in that office till his death in 1879. Paul Ansel Chadbourne, who afterwards became president, was professor in chemistry and natural history from 1853 to 1867. From 1854 to 1855 Addison Ballard, a graduate of the college in 1842, and a tutor in it one year, was professor of rhetoric. In 1855 John Bascom, a graduate of the college in 1849, and a tutor in it one year, became professor of rhetoric and remained till 1874, when he was called to the presidency of the University of Wisconsin. In 1887 he returned to Williams as lecturer on sociology. From 1854 to 1868 Arthur Latham Perry, a graduate of the college in 1852, and a tutor in it one year, was professor of history, political economy, and German. From 1868 till 1891 he filled the professorship of history and political economy. From 1858 to 1860 Thomas Edwards Clark was professor of chemistry. Franklin Carter, a graduate of the college in 1862, who afterwards became president, had the department of Latin and French from 1863 to 1868, and of Latin from 1868 to 1872, when he became professor of German in Yale. William Reynolds Dimmock, a graduate of the college in 1855, was professor of Greek from 1868 till 1872, when he became head-master of the new Adams Academy at Quincy. Arthur Williams Wright, a graduate of Yale in 1859, had the chair of physics and chemistry from 1868 to 1872, when he became professor of physics in Yale. Charles Franklin Gilson, a graduate of the college in 1853, was professor of modern languages from 1868 till his death in 1881. Sanborn Tenney, a graduate of Amherst in 1853, was professor of natural history from 1868 till his death in 1877. James Marshall Anderson, a graduate of the college in 1854, was professor of mathematics one year. Charles Russell Treat, a graduate of the college in 1863, was professor of physiology and vocal and physical culture from 1866 to 1869. Cyrus Morris Dodd, a graduate of the college in 1855, has been professor of mathematics since 1869.

Some professorships were partly or wholly endowed during this period. The Lawrence Professorship of Greek was named in honor of Amos Lawrence. The Morris Professorship of Rhetoric was named for Philip Van Ness Morris, an early donor to the college. William E. Dodge gave a fund to endow the presidency of the college. Orrin Sage gave name to the Professorship of History and Political Economy. David Dudley Field, a graduate of the college in 1825, endowed the Field Memorial Professorship of Astronomy, built the new Astronomical Observatory at a later period, and often came to the help of the college. The professorship of Latin is named from the State, which granted special help to the college in its emergency.

Dr. Hopkins resigned the presidency in 1872. During the 36 years of his administration there were 1,491 graduates, an average of 41 each year. These graduates occupied manifold positions of service and responsibility. James Abram Garfield, President of the United States, was a graduate of the college in 1856. Dr. Hopkins retained the professorship of moral and intellectual philosophy until his death in 1887. In his anniversary discourse in 1886 he said:

If we include the present graduating class, the whole number of the alumni now living is 1,726. Of these, all except 31 have been taught by me. I have also taught 534 of the alumni who have passed away; in all, 2,229.

In this noble work of teaching he did much in bringing the college to what he called his ideal of what a college ought to be.

An institution where a young man, during the critical period of transition from boyhood to manhood, and even later, may have an opportunity to do for himself the best that he can do; and also one that shall do for every such young man the best that can be done for him.

A sound body, a disciplined mind, a liberal education, a right character, these ought to be the result of a course in college. These it will give if the young men are disposed to do for themselves the best that they can do, and if the college has the means to do, and will do, the best that can be done for them.

THE ADMINISTRATION OF PRESIDENT CHADBOURNE.

Dr. Hopkins had fixed upon his seventieth year as the time for resigning the presidency. He therefore resigned in 1872, and Paul Ansel Chadbourne, a graduate of the college in 1848, a tutor in it one year, and a professor in it 14 years, was elected president and was inaugurated July 27, 1872.

In 1872, the trustees, aided by the alumni, built and furnished College Hall, in order to reduce the price of board to students. It is a building of three stories, the dining halls are on the first floor, and the other stories are used as dormitories. In 1879, Edward Clark, a graduate of the college in 1831, bought for the college the "Wilder Cabinet," a valuable collection of minerals. In 1882 he erected a fine structure of stone to contain this collection. This building is called "Clark Hall" in honor of the donor.

The teaching force of the college was much the same as under the preceding presidency: Dr. Hopkins in moral and intellectual philosophy, Dr. Bascom in rhetoric, Professor Perry in history and political economy, Professor Gilson in modern languages, Professor Tenney in natural history, and Professor Dodd in mathematics. In 1872, Edward Herrick Griffin, a graduate of the college in 1862 and a tutor in it one year, was elected professor of Latin. He remained with the college in the several chairs of Latin, rhetoric, and mental and moral philosophy, till 1889, when he became dean of Johns Hopkins University. Since 1872 Orlando Marcellus Fernald, a graduate of Harvard in 1864, has filled the Lawrence Professorship of Greek. From 1872 to 1876 Ira Remsen, a graduate of the College of the City of New York, was professor of physics and chemistry. From 1876 to 1881 Mase Shepard Southworth, a graduate of Yale in 1868, was professor of chemistry. From 1876 to 1881, Truman Henry Safford, a graduate of Harvard in 1854, was professor of natural philosophy and astronomy. Since 1881 he has filled the Field Memorial Professorship of Astronomy. From 1876 to 1881 Lewellyn Pratt, a graduate of the college in 1852, was professor of rhetoric. From 1876 to 1881 George Lansing Raymond, a graduate of the college in 1862, was professor of oratory.

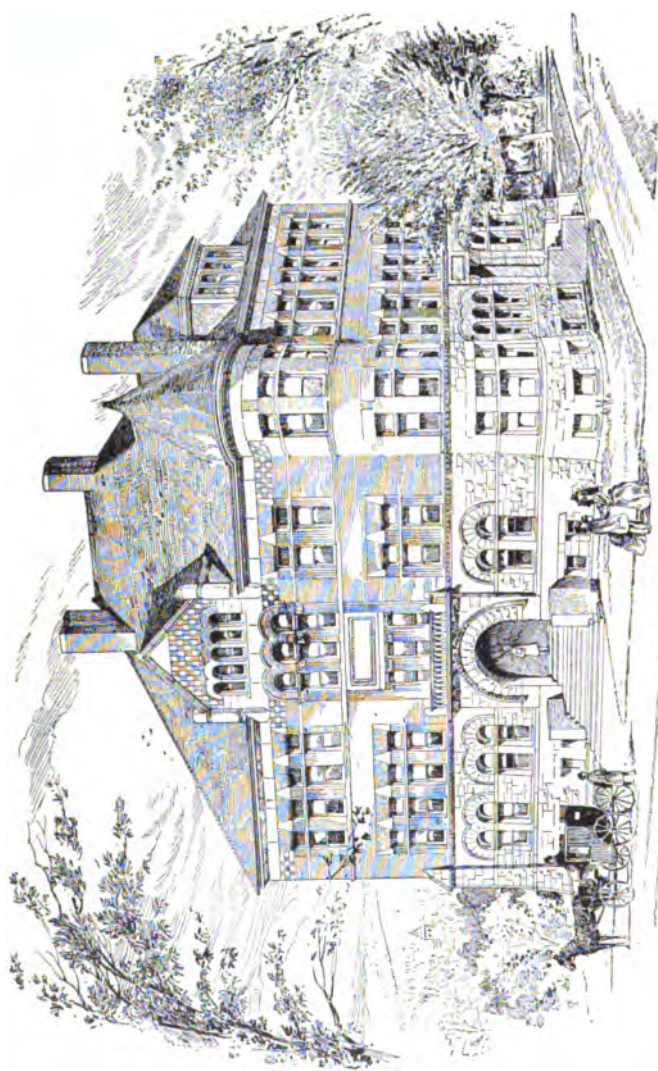
In the early years of this presidency there was a considerable increase of students. During the 9 years of this administration there were 304 graduates, a yearly average of nearly 34. In 1881 Dr. Chadbourne resigned the presidency and after a brief period in charge of the State Agricultural College at Amherst he died in 1883. The board of trustees of Williams College put on record this appreciation of his services:

His marked ability, both as a teacher and as an executive officer, has tended greatly to the prosperity of the college.

THE ADMINISTRATION OF PRESIDENT CARTER.

The alumni and other friends of the college joined the trustees in immediately naming the new president, and Franklin Carter, a graduate of the college in 1862, the professor of Latin and French in it from 1863 to 1868, and of Latin from 1868 to 1872, and the professor of German in Yale from 1872 to 1881, was elected president, and was inaugurated July 6, 1881.

This administration has been characterized by a great enlargement of the resources of the college. Upon accepting the presidency Dr. Carter gave immediate attention to the financial condition of the college, and by personal solicitation secured for the general endowment \$55,000 and for the Garfield professorship \$45,000. This was the happy turning point in the material affairs of the college. In 1882 the Field Memorial Observatory, with its fine meridian circle by Repsold, was opened for the advanced study of astronomy, which has always held a prominent place in the college, and is the only department in which the degree of doctor of philosophy is given. In 1882 Edwin D. Morgan, of New York, built



MASS. HOPKINS MEMORIAL
 Williams College, Mass.
 Allen & Kenney, Architects - Boston

a noble edifice, of the native stone of the region, as a dormitory, to be supplied with all the conveniences. This most costly of all our buildings is called "Morgan Hall," in honor of the donor. In 1883 James B. Jermain endowed the Barclay-Jermain professorship of natural theology. The same year, by his will, Henry T. Morgan gave a liberal sum for the benefit of those students who need pecuniary aid in their college course. In 1883 Josiah Lasell, a graduate of the college in 1844, began a fund for a new gymnasium. After his death this fund was increased by his wife and by their son, Josiah M. Lasell, a graduate of the college in 1886. The fine stone building, fully equipped with all modern appliances for harmonious physical development, bears the name of the donors, "Lasell Gymnasium." In 1886 Mrs. Eliza W. Field presented the college with an art collection, which finds an appropriate place in the library extension. In 1887 Mrs. Catherine M. McCoskry, of New York, endowed by will the Thomas Thornton Read professorship of physics. The same year a generous gift came to the general fund of the college from the estate of Richard Bond, of Roxbury, Mass. In 1888 J. Leland Miller and Mrs. Miller, of Sheffield, Mass., endowed a professorship of American history, literature, and eloquence. The same year, by his will, Francis Henshaw Dewey, a graduate of the college in 1840, and a trustee of it from 1869 till his death in 1887, gave liberally to the prize and scholarship funds of the college. In 1889 Henry Winkley, of Philadelphia, gave by will a goodly sum to the general fund of the college. In 1889 the alumni, under the generous lead of Frederick F. Thompson, of New York, a graduate of the college in 1856, built the "Mark Hopkins Memorial" building for recitation rooms and offices. This handsome structure of stone and brick is three stories in height, with an attic hall. The same year an anonymous friend of the college paid the expense of extensive additions to the library building. In 1891 Mr. Thompson began the first of three new laboratories whose total cost will be over \$100,000. Many friends of the college have contributed to the general and special funds of the college during this administration. The president has secured over a million of dollars in these ten years, an average of \$100,000 a year.

The teaching force of the college, under Dr. Carter's administration, has been enlarged in keeping with the increased material prosperity of the college. President Hopkins continued to hold the Jackson professorship of Christian theology and the professorship of moral and intellectual philosophy; President Carter filled the Barclay Jermain professorship of natural theology; Professors Perry, Safford, Dodd, and Fernald continued in the departments that they conducted under the preceding administration. Professor Griffin became professor of rhetoric, and in 1886 associate professor of philosophy. In 1881 Richard Austin Rice, a graduate of Yale in 1868, was made professor of modern languages. In 1881 Leverett Mears, a graduate of Amherst in 1874, became professor of physics and chemistry, and in 1889 professor of

chemistry. In 1881 Samuel Fessenden Clarke, of Johns Hopkins University, became professor of natural history. From 1881 to 1887 Frederick Leake gave instruction in French. In 1882 John Haskell Hewitt, a graduate of Yale in 1859, entered upon the Garfield professorship of ancient languages, which some friends of the college had endowed in honor of the lamented President of the country. In 1884 Luther Dana Woodbridge, a graduate of the college in 1872 and an instructor in it from 1873 to 1876, was made professor of anatomy and physiology. In 1884 John Henry Denison, a graduate of the college in 1862, was called to the pastorate of the college and to the Mark Hopkins professorship of divinity, which had been endowed by some friends of the college. In 1885 Edward Parmelee Morris, a graduate of Yale in 1874, took the Massachusetts professorship of Latin, and in 1891 was followed by Henry David Wild, a graduate of the college in 1888. In 1886 Leverett Wilson Spring, a graduate of the college in 1863, became Morris professor of rhetoric. In 1886 Bliss Perry, a graduate of the college in 1881 and an instructor in it from 1881 to 1886, was made professor of elocution and English. In 1887 Francis Lockwood Kendall, a graduate of the college in 1882, became assistant professor of modern languages. In 1888 Henry Le Favour, a graduate of the college in 1883 and an instructor in it from 1884 to 1888, was elected to the Thomas Thornton Read professorship of physics. Franklin Weston Bartlett has been instructor in Hebrew since 1887. In 1888 Charles Henry Burr, a graduate of the college in 1868, became librarian and instructor in Biblical literature. The same year Eben Burt Parsons, a graduate of the college in 1859, was made registrar and secretary of the faculty. In 1889 John Edward Russell, a graduate of the college in 1872 and a lecturer in it 2 years, became Mark Hopkins professor of intellectual and moral philosophy. In 1890 Thomas Logie, a graduate of Toronto and Johns Hopkins, became assistant professor of Romance language. The teaching force of the college has kept pace with the material progress. In 1880 there were 11 names upon the faculty list in the annual catalogue; now, in 1891, there are 24. It has been the aim of the college to have instruction given by experienced professors and not by tutors, and so to bring each student into direct and personal relations with competent masters of each subject.

There are now, 1891, upon the annual catalogue 347 men. Counting the full-course students of the classes now in college there have been 689 men under the present administration, a yearly average of 57.

There are 6 buildings used as dormitories, giving rooms for 245 men. There are 10 houses, some of them costly and elegant structures, belonging to the Greek Letter fraternities, which have rooms for upwards of 50 men. There are, also, available rooms in the hotels and private houses of the village.

There are 10 buildings used for recitation rooms, cabinets, and laboratories. There are 2 astronomical observatories. The library has lately

received marked attention. The old building has been enlarged, so as to make more room for study and reference tables and for a reading room. The generous gift of Mrs. John P. Adriance to the library fund will increase the 30,000 volumes, now in possession of the college, as they may be needed.¹

With the accession of President Carter some changes were made in the arrangement of studies, but no essential change has been made in the character or methods of the college. The trustees and faculty desire to maintain the present methods, with whatever of increased efficiency new opportunities and experience may afford. One who has every reason to know of what he speaks says:

The aim of Williams College is to secure to each graduate a training of all the mental faculties, and thus to furnish a general education as a preparation for a useful life. The college can not claim such facilities as are necessary for the development of first-class specialists, but it may claim that its course of study, as conducted by an excellent corps of teachers, is well suited to give a solid basis for professional life. It is claimed peculiarly that the instruction in philosophy, by the distinguished ex-President Rev. Dr. Mark Hopkins, has proved to be of the greatest service to such of the graduates as have entered the ministry, and has, indeed, turned many into that particular field of professional life. In several of the other departments the teaching has recently become more thorough, and both real acquisition and patient thinking are now necessary to secure its degree. In junior and senior years a variety of electives allows the student to establish a more direct connection with his subsequent studies than was formerly the case, but the college remains substantially a college, with an enforced curriculum, and is not as yet even an embryo university. It is, however, true that both natural science and the modern languages receive more attention and a larger share of time than in most of the older New England colleges. A special feature in the college management has, for many years, been the assistance given to poor, worthy young men. But no student is assisted whose scholarship is not respectable. The location of the college secures comparative freedom from temptation, and the development of a pure character in each student has always been regarded by the officers as of the utmost importance. It is intended that the diploma shall signify that its recipient has a good moral character.

Williams College is a religious institution, a Christian college. Though the college was at first mainly under Congregationalist influence, its board of trustees is nonsectarian, and contains at present more Presbyterians and Episcopalians, taken together, than Congregationalists. Similar proportions of religious belief exist probably among the students. But all its officers are Christian theists, and the college is held steadily to Christian observances and a Christian faith.

¹ In the bibliography of the college, attention is called to (1) Williams' College, historical sketch in Mass. Hist. collection, Vol. 8. (2) Williams' College, History of, by Durfee. (3) An Old Fort, and what came of it, by N. H. Eggleston, in Harper's Magazine, vol. 63, pp. 535, 1881.

CHAPTER X.

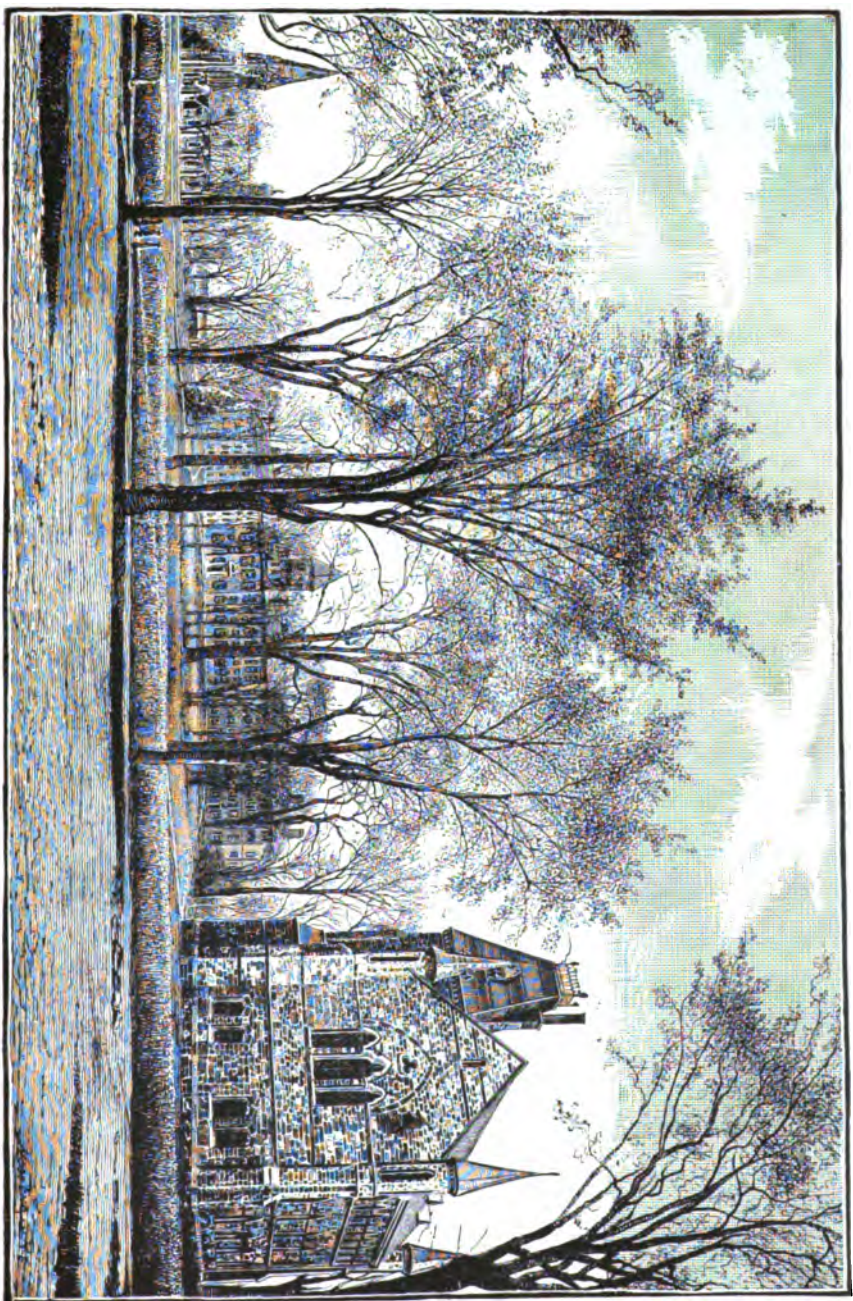
THE ANDOVER THEOLOGICAL SEMINARY.

By REV. CECIL F. P. BANCROFT, Ph. D., L. H. D

The Andover Theological Seminary became a distinct institution by an act of the legislature of Massachusetts passed June 19, 1807. Its first professors, 2 in number, were inducted into office and the school was opened for instruction September 28, 1808. It claims to be the first regular theological seminary distinctively and exclusively organized for the theological training of ministers of Protestant churches in the United States, a claim which is also made by the theological seminary of the Reformed [Dutch] Church in New Brunswick, N. J. Strictly speaking, the Andover seminary is "the theological institution in Phillips Academy," incorporated by act of the legislature in 1780, although opened for instruction in 1778. But in fact its funds, faculty, records, buildings, and grounds are as distinct as if it were governed and administered by a separate board of trustees, and the connection of the two schools is practically one of sympathy and common origin, and is organic only in a legal and historic sense.

It is interesting, however, to see how the idea of theological training antedates the institution of the seminary proper. The Rev. Dr. Pearson, the first professor, who had also been the first principal of the academy 30 years before, in a "Historical Sketch" which he prepared for the formal opening of the seminary, spoke of the academy as "the radix of the seminary." The original constitution of the academy (1778) contains the following paragraph, which clearly foreshadows systematic theological instruction:

And whereas many of the students in this seminary may be devoted to the sacred work of the gospel ministry, that the true and fundamental principles of the Christian religion may be cultivated, established, and perpetuated in the Christian church so far as this institution may have influence, it shall be the duty of the master, as the age and capacities of the scholars will admit, not only to instruct and establish them in the truth of Christianity, but also early and diligently to inculcate upon them the great and important Scripture doctrines of the existence of one true God, the Father, Son, and Holy Ghost; of the fall of man, the depravity of human nature, the necessity of an atonement, and of our being renewed in the spirit of our minds; the doctrines of repentance toward God and of faith toward our Lord Jesus Christ; of sanctification by the Holy Spirit, and of justification by the free grace of God, through the redemption that is in Jesus Christ (in opposition to the erroneous and dangerous doctrine of justification by our own merit, or a dependence on self-righteousness), together with the other important doctrines and duties of our holy Christian religion.



THE ANDOVER THEOLOGICAL SEMINARY.

In the will of John Phillips, LL. D., one of the founders of the Andover Academy (d. April 21, 1795), was a clause providing for the assistance of students in the study of divinity under the direction of some eminent Calvinistic minister of the gospel, till a theological professor should be employed in one of the academies at Andover and Exeter or in both. It was the design of Dr. Phillips to employ a regular theological professor in the academy as soon as the income of his endowment for the purpose would allow of it, and in fact the Rev. Jonathan French, pastor of the South Parish in Andover, was designated by Dr. Phillips for this service, and it appears that Mr. French entered upon his duties as provisional professor, and continued in that office till the theological seminary was started; that he received £10 the first year, and that the sum was increased from time to time till it rose to \$80 in 1807.

A letter of Mr. French's, written in 1778 to Judge Niles, of Vermont, shows that at that date, just as the academy was started, the thought of a theological academy was entertained, and had taken shape in his mind as follows:

The students should be such only as have been graduated at some college, or are otherwise qualified to enter upon the study of divinity; should tarry 3 years at the academy, and be boarded in common. None should be allowed to enter but persons of sobriety and good morals. The president should be the first in the land for good principles, learning, and piety, if to be had; the best of libraries for the purpose be procured, and a whole course of divinity be studied, and everything practicable that may assist to qualify young gentlemen for the work of the ministry be taught, etc. Are there not affluent and charitable enough to promote such a design? And would not such a plan, under the smiles of Heaven, be likely to revive and continue the purity of doctrines and furnish the churches in this land with the ablest ministers of Jesus Christ in spite of all opposers? But you know my genius is rather to frame plans than to execute. This, however, I do not mean as a plan, but only a hint at a plan, or a thought that might be improved into a plan, the most serviceable in the cause of religion of anything, perhaps, ever set on foot in this or any other country.

The founders of the academy, Hon. Samuel Phillips and Dr. John Phillips, together with Rev. Mr. French and Dr. Eliphalet Pearson, and, as the executive officer and associate of these, Samuel Phillips, jr. (commonly known as Judge Phillips), were in fact the founders of the theological seminary, though only two of them lived to see its full development.

The immediate occasion for the establishment of the seminary was intimately connected with the Unitarian controversy. In May, 1805, Dr. Henry Ware, a Unitarian, was inaugurated Hollis professor of divinity in Harvard College. In the discussion that followed Dr. Pearson took a prominent part. He was a somewhat eminent champion of the anti-Hopkinsian Calvinism of New England. For 20 years he had been professor of Hebrew and other oriental languages at Harvard. Since 1800 he had been one of the five governing fellows. After the death of President Willard, in 1804, he performed for more than a year

the functions of president. After the election, in 1806, of Dr. Ware as Hollis professor, and Dr. Webber as president, he resigned his offices at Cambridge and returned to Andover. There was a widespread distrust of Harvard among the so-called "orthodox," and a feeling that something must be done to meet the aggressive and growing Unitarianism and Arminianism. Dr. Pearson was "thoroughly convinced that a new theological seminary ought to be instituted for the purpose," and he engaged with all his native ardor in plans and efforts toward this end. Having been a personal friend of Judge Phillips and the founders of the academy, and fully conversant with their purposes and aspirations concerning it, he appealed successfully to the widow of Judge Phillips, and their son, Col. John Phillips, to perfect the original purpose of the academy by endowing a theological department. Mr. Samuel Abbott, a prosperous merchant in Andover, was also enlisted in favor of the project. It had been his plan to give the bulk of his property to Harvard College, but sharing the general feeling among the evangelicals that Harvard had lapsed to Unitarianism, he revoked his will and pledged his fortune to the new seminary. In close conference with these persons was Samuel Farrar, the treasurer of the academy and the legal adviser and intimate friend of Madam Phillips; Mark Newman, the principal of the academy; Rev. Jonathan French, the parish minister, and Rev. Dr. Jedediah Morse, of Charlestown. A constitution was prepared embodying the views of the "moderate Calvinists," and was mainly the work of Dr. Pearson and Messrs. French and Farrar.

But those who were directly interested in establishing a theological school at Andover were not the only persons among the ministers and evangelical Christians who were grieved and alarmed at the theological situation and prospects. That section of the Calvinistic divines that held the doctrinal views of Samuel Hopkins, not being aware of the Andover movement, and not being in full doctrinal sympathy with the Andover theology, had made an independent canvass soon after the election of Professor Ware, with a view to creating a theological seminary. The leaders in this enterprise were Rev. Dr. Samuel Spring, of Newburyport, and Dr. Emmons, of Franklin. With them were associated wealthy and generous laymen, Messrs. Bartlet and Brown, of Newburyport, and Norris, of Salem. They proposed a seminary based on the Calvinistic interpretation of the Scriptures as explained and understood by the Hopkinsian divines. They had gone so far as to have fixed upon West Newbury as the seat of the college, and for their professor of theology Rev. Leonard Woods, pastor at West Newbury, who afterwards became the first professor of theology in Andover.

When the news of these proceedings came to the ears of the men promoting the Andover enterprise, they at once sought a conference with the men interested in the Newbury institution. When the representatives of the two wings of the Calvinistic party met, compared views and resources, they could not fail to see that the creation of two

seminaries within 20 miles of each other, essentially similar in doctrine, purpose, and character, and in the face of what they conceived to be a powerful and dangerous foe, would be divisive and unwise. The proposed venture was in many respects an experiment, and required favoring conditions. Their main purpose was the same, and yet the two parties cherished, with conscientious tenacity, each its peculiar variations of doctrine and expression. Frequent conferences were held, much discussion was had, careful consideration was given to all details of doctrine and faith, and after protracted negotiations, painstaking deliberation, mutual conciliation and concession in the spirit of unity and concord, a basis of union was found and a creed agreed upon. What seemed at times hopelessly impossible was at last accomplished. It was not a perfect union, as subsequent controversies have shown, but it was a generous and a hearty working plan of coöperation.

The school was to be located at Andover. The constitution prepared for the Andover school was to stand. Certain "additional statutes" were set up in conference with the Newbury party, to be of equal authority with the original Andover statutes; the trustees of the Phillips Academy were to hold and administer the endowments under their charter; Dr. Woods was to be professor of theology, and Dr. Pearson was to be professor of sacred literature; Madam Phillips and her son were to erect the buildings; Mr. Abbot was to give \$20,000, Captain Bartlet \$20,000, Mr. Norris \$10,000, and Mr. Brown \$10,000. The last four gifts constitute the "associate foundation," and the donors are known as the "associate founders."

The points of compromise and adjustment were chiefly as follows: The union was experimental and provisional and might be terminated at the end of 7 years if in the judgment of the "associate" founders and their "visitors" it proved to be "unsafe or inexpedient." Dr. Woods, with all his Hopkinsian antecedents, was appointed Abbot professor of the Calvinistic foundation, and Dr. Pearson, the "Cambridge Calvinist," was appointed "associate" professor of the Hopkinsian foundation. The associate statutes contain an elaborate creed, known in controversy as the "Andover creed," differing from the Westminster Assembly's shorter catechism, which was the chosen symbol of the Andover party, by significant omissions and equally significant additions. A board of visitors, originally 7 in number, but ultimately only 3, was constituted to be "the guardians, overseers, and protectors" of the associate foundation, and to this board were given extraordinary powers. The Andover founders also adopted certain "additional statutes" in which they accepted for their foundation both the associate creed and the visitatorial system to be forever binding in case the union became a permanent one; and both parties united in the following provision:

The board of visitors in all their proceedings are to be subject to our statutes herein expressed, and to conform their measures thereto; and if they shall at any time act contrary thereto, or exceed the limits of their jurisdiction and constitutional power, the party aggrieved may have recourse by appeal to the justices of the supreme judi-

cial court of this Commonwealth for the time being for remedy, who are hereby appointed and authorized to judge in such cases, and, agreeably to the determination of the major part of them, to declare null and void any decree or sentence of said visitors which, upon mature consideration, they may deem contrary to the said statutes, or beyond the just limits of their power herein prescribed; and by the said justices of the supreme judicial court for the time being shall the said board of visitors at all times be subject to be restrained and corrected in the undue exercise of their office.

It appears, therefore, that the seminary is under the immediate care of the trustees of Phillips Academy, and under their charter and their elaborate constitution; second, under the statutes of the "original" (Andover) founders; third, under certain "additional statutes" of the same weight and force as the original statutes and in some respects supplementing and superseding them; and the "associate" foundation is under its own statutes, which in their main features have been adopted into the original statutes by means of the additional statutes; that the working government is in the trustees of Phillips Academy; that the visitors have certain large powers of inspection, control, and supervision, as will be shown below; and that behind and above all, and ultimate, is the supreme court of the State, although instances are conceivable in which the supreme court of the United States would be the court of final appeal. To this comprehensive summary should be added the provision of the constitution that subsequent founders of professorships and benefactors may establish statutes governing their benefactions with a view to their fullest efficacy, provided, always, that such statutes be not inconsistent with the object of the institution, its constitution, and the statutes and will of other benefactors.

The Andover creed, the basis of the union of the "two wings" of orthodoxy and the occasion of much subsequent discussion, has a historic interest which far exceeds its local origin and uses. It has been read and subscribed in public by each professor on his inauguration, and before the trustees every fifth year afterwards, as follows:

I believe that there is one, and but one, living and true God; that the word of God, contained in the Scriptures of the Old and New Testament, is the only perfect rule of faith and practice; that agreeably to those Scriptures, God is a spirit, infinite, eternal, and unchangeable in his being, wisdom, power, holiness, justice, goodness, and truth; that in the Godhead are three persons, the Father, the Son, and the Holy Ghost; and that these three are one God, the same in substance, equal in power and glory; that God created man after his own image in knowledge, righteousness, and holiness; that the glory of God is man's chief end, the enjoyment of God his supreme happiness; that this enjoyment is derived solely from conformity of heart to the moral character and will of God; that Adam, the federal head and representative of the human race, was placed in a state of probation, and that in consequence of his disobedience all his descendants were constituted sinners; that by nature every man is personally depraved, destitute of holiness, unlike and opposed to God; and that previously to the renewing agency of the Divine Spirit all his moral actions are adverse to the character and glory of God; that being morally incapable of recovering the image of his Creator, which was lost in Adam, every man is justly exposed to eternal damnation; so that, except a man be born again he can not see the kingdom of God; that God, of his mere good pleasure, from all eternity, elected

some to everlasting life, and that he entered into a covenant of grace to deliver them out of this state of sin and misery by a Redeemer; that the only Redeemer of the elect is the eternal Son of God, who for this purpose became man, and continues to be God and man in two distinct natures and one person forever; that Christ as our Redeemer executeth the office of a prophet, priest, and king; that agreeably to the covenant of redemption the Son of God, and he alone, by his suffering and death, has made atonement for the sins of all men; that repentance, faith, and holiness are the personal requisites in the gospel scheme of salvation; that the righteousness of Christ is the only ground of a sinner's justification; that this righteousness is received through faith, and that this faith is the gift of God; so that our salvation is wholly of grace; that no means whatever can change the heart of a sinner and make it holy; that regeneration and sanctification are effects of the creating and renewing agency of the Holy Spirit, and that supreme love to God constitutes the essential difference between saints and sinners; that, by convincing us of our sin and misery, enlightening our minds, working faith in us, and renewing our wills, the Holy Spirit makes us partakers of the benefits of redemption, and that the ordinary means by which these benefits are communicated to us are the Word, sacraments, and prayer; that repentance unto life, faith to feed upon Christ, love to God, and new obedience are the appropriate qualifications for the Lord's Supper, and that a Christian church ought to admit no person to its holy communion before he exhibit credible evidence of his godly sincerity; that perseverance in holiness is the only method of making our calling and election sure, and that the final perseverance of saints, though it is the effect of the special operation of God on their hearts, yet necessarily implies their own watchful diligence; that they who are effectually called do in this life partake of justification, adoption, and sanctification and the several benefits which do either accompany or flow from them; that the souls of believers are at their death made perfect in holiness, and do immediately pass into glory; that their bodies, being still united to Christ, will at the resurrection be raised up to glory, and that the saints will be made perfectly blessed in the full enjoyment of God to all eternity, but that the wicked will awake to shame and everlasting contempt, and with devils be plunged into the lake that burneth with fire and brimstone for ever and ever. I moreover believe that God, according to the counsel of his own will and for his own glory, hath foreordained whatsoever comes to pass, and that all beings, actions, and events, both in the natural and moral world, are under his providential direction; that God's decrees perfectly consist with human liberty, God's universal agency with the agency of man, and man's dependence with his accountability; that man has understanding and corporeal strength to do all that God requires of him, so that nothing but the sinner's aversion to holiness prevents his salvation; that it is the prerogative of God to bring good out of evil, and that he will cause the wrath and rage of wicked men and devils to praise him; and that all the evil which has existed, and will forever exist, in the moral system, will eventually be made to promote a most important purpose under the wise and perfect administration of that Almighty Being who will cause all things to work for his own glory, and thus fulfill all his pleasure. And, furthermore, I do solemnly promise that I will open and explain the Scriptures to my pupils with integrity and faithfulness; that I will maintain and inculcate the Christian faith as expressed in the creed by me now repeated, together with all the other doctrines and duties of our holy religion, so far as may appertain to my office, according to the best light God shall give me, and in opposition not only to atheists and infidels, but to Jews, Papists, Mohametans, Arians, Pelagians, Antinomians, Arminians, Socinians, Sabellians, Unitarians, and Universalists, and to all other heresies and errors, ancient and modern, which may be opposed to the gospel of Christ or hazardous to the souls of men; that by my instruction, counsel, and example I will endeavor to promote true piety and godliness; that I will consult the good of this institution and the peace of the churches of our Lord Jesus Christ on all occasions; and that I will religiously conform to the constitution and laws of this seminary, and to the statutes of this foundation.

The obvious intent of the creed was to secure the institution beyond all possibility of lapse as a defender of a certain substantial system of truths. It is clear that phrases were avoided which might give offense to either contracting party, and that facts, rather than theories and explanations, were included. Minor matters were omitted. The creed has been called a "compromise" creed, and it was such, in no offensive sense, as being acceptable to two parties who, with variant views, were tolerant to a degree of each other's opinions, and who were agreed as to the fundamental truths of the gospel of Christ. It was not a compromise in the sense that either party abated the right of private judgment or surrendered any conviction or principle. It is to be read as a whole, one part explaining every other, and in the light of the day in which it was written, and in a careful interpretation of phrases which had acquired a technical theological meaning, and of other phrases which were used in place of the current formulas. The list of heresies specified includes, for completeness, Jews, Papists, and Mohametans, but the main contention was against all forms of Unitarianism. The long catalogue gives a polemic tone to the instrument, which was in its main intent irenic and constructive, the spirit and design of the founders being to charge the professors with this duty: "To open and explain the Scriptures with integrity and faithfulness," "to maintain and inculcate the Christian faith," including "all the doctrines and duties of our holy religion."

The visitatorial system is another unique feature in the Andover Seminary. It is a device borrowed from English usage, where crown visitation, ecclesiastical visitation, and special visitation have been practiced for centuries. Many perplexing questions have arisen in connection with the somewhat anomalous introduction of this feature into the Andover institution. It is in litigation whether the act of the trustees accepting it was constitutional. The most urgent questions, however, concern the nature and extent of the power and jurisdiction of the visitors—to what degree and in what cases it is original, appellate, concurrent, and what shall be the proper occasion and procedure in visitation. Many of these questions are of such a kind that they can not be brought to issue except in course of actual exercise of office, and more particularly in case of conflict of action between the trustees and the visitors. Till recently the two boards have been in almost every instance in accord both as respects doctrine and policy, men and measures, and the difficulties are anticipated rather than actual. The board of trustees, not more than 13 nor less than 7 in number, is a self-perpetuating body. The board of visitors, 3 in number, is also a self-perpetuating body. The visitors must subscribe to the creed. The trustees are not required to do it. The majority of the trustees must be laymen; the majority of the visitors must be clergymen. The records of the trustees are open to the public; the records of the visitors have hitherto been kept private. In certain conceivable cases it is

possible for one visitors to nullify or reverse the action of 13 trustees, and it may be his duty to do so. The chief citations from the statutes touching the visitatorial system are from the act of incorporation of the trustees (1780), as follows:

And be it further enacted * * * that the trustees be the true and sole visitors, trustees, and governors of said Phillips Academy.

And from the statutes of "the Theological Institution in Phillips Academy" (1808), as follows:

The power and duties of the board of visitors * * * shall be as follows, namely: To visit the foundation once in every year, and at other times, when regularly called thereto; to inquire into the state of this our fund, and the management of this foundation, with respect both to professors and students; to determine, interpret, and explain the statutes of this foundation in all cases brought before them in their judicial capacity; to redress grievances, both with respect to professors and students; to hear appeals from decisions of the board of trustees, and to remedy, upon complaint duly exhibited in behalf of the said professors or students; to review and reverse any censure passed by said trustees upon any professor or student on this foundation; to declare void all rules and regulations made by the said trustees relative to this foundation, which may be inconsistent with the original statutes thereof; to take care that the duties of every professor on this foundation be intelligibly and faithfully discharged, and to admonish or remove him, either for misbehavior, heterodoxy, incapacity, or neglect of the duties of his office; to examine into the proficiency of the students, and to admonish, suspend, or deprive any student for negligence, contumacy, or any heinous crime committed against the laws of God or the statutes of this foundation; and, in general, to see that our true intentions, as expressed in these our statutes, be faithfully executed; always administering justice impartially, and exercising the functions of their office in the fear of God according to the said statutes, the constitution of this seminary, and the laws of the land.

Every election of a professor on this foundation shall within 10 days be presented to the visitors, who are hereby vested with the power and right of approving or negating, at a regular meeting, every such election. But, if any such election be not either approved or negated by the said visitors, within 12 months from the commencement of a vacancy in any professorship; such election shall be considered as approved by the visitors, and shall accordingly be deemed constitutional and valid; provided always, that such election shall have been regularly communicated to the president or secretary of the board of visitors 10 days at least previously to the expiration of the 12 months aforesaid.

The professors in the seminary must be either Congregationalists or Presbyterians, and as a matter of fact they have been chosen solely with regard to fitness from one or the other body indiscriminately. In the progress of events the Presbyterians have developed, beginning with Princeton, their own institutions, and Andover, while strictly independent of all ecclesiastical control, has become practically a Congregational seminary. It was provided that it should be "equally open to Protestants of all denominations," and from the beginning it has had a considerable attendance from other denominations than the two mentioned in its constitution. It has been no unusual circumstance to find half a dozen denominations represented in a single class, but the greater part of the students have been Congregationalists or Presbyterians, and have labored in one or the other of the two churches.

The seminary was fully established by the acceptance of its constitu-

tion, statutes, and trusts on the part of the trustees of Phillips Academy, and the instruction began in 1808. During the first year 36 students from various sections of the country were admitted to the privileges of the institution, a number far in excess of the fondest expectations of its founders. Its establishment created a revolution in the methods of ministerial education which had previously been conducted by the colleges, and by eminent pastors in their homes, oftentimes in a very irregular way and for no defined period of time. More than a hundred seminaries, purely theological, have been established in various parts of the country, substantially after the Andover plan. The Congregationalists have seven such seminaries, and the Presbyterians thirteen.

The success of the seminary encouraged its founders, who again and again made new gifts, and others came forward with their benefactions. The original two professorships have become nine; three lectureships also have been endowed; lands, buildings, books, and various collections have been aggregated. Considerable sums have been given for scholarships and other student aid. The amount of instruction has been increased, and elective courses have been established. Two fellowships of an annual value of \$600 have been established for two years of graduate study. A fourth year of post-graduate instruction has been established and partially endowed. More than 3,200 students have received instruction, and nearly 2,000 have graduated. The graduates have gone to the very ends of the earth preaching the gospel. The zeal for missions has been constant and great from the time, in the very commencement of the seminary, when the application of some of its students led to the establishment of the great missionary society, "The American Board of Commissioners for Foreign Missions," and the era of modern missions was fully begun. In all educational work, in the religious press, in religious literature, and sacred learning, the Andover professors and the Andover graduates have taken a conspicuous part.

The present material equipment is as follows: A domain of about 100 acres of land, of which so much is taken as is necessary for the public buildings and grounds, for the recreation of the students, and for the residences of the professors and of others connected with the institution. The remaining lands are used for farming purposes, and are reserved for the growth of the institution. Phillips Hall was erected by Madam Phillips and her son, Col. John Phillips, as a part of the original foundation. It contains 30 chambers for students, half of them with one or two bedrooms attached, and the seminary reading room. Bartlet Hall is a dormitory, with 32 studies, each with 2 bedrooms attached, and was built by Captain Bartlet in 1820. The building now known as Bartlet Chapel was also a gift from Captain Bartlet, and was designed at first for three distinct purposes, viz: Three lecture rooms for the three seminary classes, the library, and the Sunday chapel. The erection of the stone chapel and the Breechin Hall made it possible in 1879 to reconstruct this building, which is now wholly devoted to lecture rooms, and the students' assembly room and chapel. The cost of

this reconstruction was defrayed from the gift of Mr. Henry Winkley. The stone chapel, built in 1875 mainly out of the proceeds of a general subscription, at a cost of about \$50,000, is a handsome gothic church, and serves for the Sunday worship of the chapel, church, and congregation. Brechin Hall was built in 1865, and handsomely endowed by Messrs. John Smith, Peter Smith, and John Dove, partners in business and citizens of Andover, who gave it the name of their native town in Scotland. It contains the seminary, library, and the various collections belonging to the institution. The gymnasium is a brick building, two stories high, 40 feet by 90, formerly the main school building of Phillips Academy, but since 1866 devoted to its present purpose, and jointly used by both institutions. The stone building erected originally for a students' workshop in the days before gymnasiums, was selected by Professor and Mrs. Stowe for their residence, and fitted up as a dwelling in 1852; afterwards it was the students' refectory, and is at present "the Mansion House," the local hotel. There are 11 houses occupied by the professors, and 10 other dwellings. The Biblical Museum is a large collection of objects brought from Bible lands, illustrating the natural history, antiquities, manners, and customs, and the topography and scenery of the East. There are also maps, models, photographs, and a missionary collection, an Assyrian relief, coins, shells, geological and mineralogical cabinets, and other objects of interest. The library contains about 47,000 printed books, 18,000 pamphlets, and about 20 valuable portraits and busts. There is a small collection of manuscripts. The value of this aggregate equipment is about \$300,000.

The funds bearing interest are shown in the following table, the amounts being given for convenience in round numbers:

Year.	Description.	Amount.
1808	Samuel Abbot, Abbot professorship.....	\$20,000
1808	William Bartlet, Bartlet professorship.....	25,000
	Associate fund:	
1809	William Bartlet	\$10,000
1809	Moses Brown	10,000
1809	John Norris	10,000
1845	Mrs. John Norris (legacy)	30,000
1813	Samuel Abbot, legacy, Abbot fund.....	79,000
1819	Moses Brown, Brown professorship.....	25,000
1835-48	Sarah and Rebecca Waldo, Waldo fund.....	15,000
1841	William Bartlet, Bartlet fund	50,000
1856	General subscription, Boston fund.....	28,000
1857	Samuel A. Hitchcock, Hitchcock professorship.....	25,000
1869	Samuel A. Hitchcock, contingent fund.....	35,000
1872	Samuel A. Hitchcock, relief fund.....	52,000
1866	Henry A. Hyde, Hyde lectureship.....	5,000
1866	Wells and Edward Southworth, Southworth lectureship.....	5,000
1866	John Smith, Peter Smith, John Dove, library fund.....	25,000
1877	John Dove, legacy, library fund.....	10,000
1880	Peter Smith, legacy, library fund.....	10,000
1867	Sophia Smith, Smith professorship.....	38,000
1868	Frederick Jones, Jones professorship.....	16,000
1875-90	John L. Taylor, Frederick H. Taylor, John Phelps Taylor, Taylor professorship.....	43,000
1881	General subscription (Park testimonial fund).....	14,000
1878-90	Henry Winkley (legacy \$20,000).....	70,000
1880	Mrs. Valeria G. Stone, Stone fund.....	100,000
1880	Mrs. Valeria G. Stone, Stone professorship.....	50,000
1887	Nathaniel G. White, legacy, White fund.....	50,000
1890	William and Olive T. Richardson, legacy.....	30,000
	Various gifts, scholarship and beneficiary fund.....	97,000
	Various gifts, library funds.....	28,000
	Legacies not yet available.....	110,000

It appears, therefore, that the greatest benefactors of the seminary have been Samuel Abbot, William Bartlet, Samuel A. Hitchcock, and Mrs. Valeria G. Stone, each of whom gave more than \$100,000, including gifts for immediate use which do not appear in the list above. The present financial needs of the seminary are for unrestricted funds, professorships, fellowships for advanced study, buildings, and the library. From one point of view the seminary has already large resources, but these in themselves are an appeal for still larger means for advancing theological science and promoting theological education.

The trustees appoint from year to year a president of the faculty from among the professors, but at two separate periods the office of president of the seminary has been recognized, the incumbents being Rev. Ebenezer Porter, D. D. (professor, 1812-1832), 1827-1834; Rev. Justin Edwards, D. D., 1836-1842.

The various professorships, and the professors, with their terms of office, have been as follows:

THE ABBOT PROFESSORSHIP OF CHRISTIAN THEOLOGY, endowed 1807: Rev. Leonard Woods, D. D., 1808-1846; Rev. Edwards Amasa Park, D. D., LL. D. (of Sacred Rhetoric, 1836-1847), 1847-1881, (emeritus 1881 to the present); Rev. George Harris, D. D., 1882 —, in office.

THE "ASSOCIATE" PROFESSORSHIP OF SACRED LITERATURE, endowed 1808: Rev. Eliphalet Pearson, LL. D., 1808-1809; Rev. Moses Stuart, 1810-1848; Rev. Edward Robinson, D. D., LL. D. (extraordinary), 1830-1833; Rev. Bela Bates Edwards, D. D. (of Hebrew, 1837-1848), 1848-1852; Rev. Calvin Ellis Stone, 1852-1864; Rev. Joseph Henry Thayer, D. D., 1864-1882; Rev. Frank Edward Woodruff, 1882-1886; Rev. William Henry Ryder, D. D., 1887 —, in office.

THE BARTLET PROFESSORSHIP OF SACRED RHETORIC, endowed 1808: Edward Dorr Griffin, D. D., 1809-1811; Rev. Ebenezer Porter, D. D., 1812-1832 (president of the seminary, 1827-1834); Rev. Thomas Harvey Skinner, D. D., LL. D., 1833-1835; Rev. Edwards Amasa Park, D. D., LL. D. (of Sacred Theology, 1847-1881, emeritus 1881 to the present), 1836-1847; Rev. Austin Phelps, D. D., 1848-1879; Rev. William Jewett Tucker, D. D., 1879 —, in office.

THE BROWN PROFESSORSHIP OF SACRED ECCLESIASTICAL HISTORY (of Sacred Rhetoric from 1819 to 1824), endowed 1819: Rev. James Murdock, D. D., 1819-1828; Rev. Ralph Emerson, D. D., 1829-1853; Rev. William Greenough Thayer Shedd, D. D., LL. D., 1853-1862; Rev. Egbert Coffin Smyth, D. D., 1863 —, in office.

THE HITCHCOCK PROFESSORSHIP OF HEBREW AND HEBREW LITERATURE, endowed 1857, maintained as a seminary professorship from 1837 to 1857: Rev. Bela Bates Edwards, D. D., 1837-1848 ("associate" professor, 1848-1852); Rev. Elijah Porter Barrows, D. D., 1853-1866; Rev. Charles Marsh Mead, PH. D., D. D., 1866-1882; Rev. George Foote Moore, D. D., 1883 —, in office.

SMITH PROFESSORSHIP OF THEOLOGY, etc., in a special course, 1868-1879; **OF BIBLICAL THEOLOGY** from 1882, endowed 1868: Rev. John Lord Taylor, D. D., 1868-1879; Rev. Edward Young Hincks, D. D., 1882 —, in office.

JONES PROFESSORSHIP OF ELOCUTION, endowed 1868: Rev. John Wesley Churchill, 1868 —, in office.

STONE PROFESSORSHIP OF THE RELATIONS OF CHRISTIANITY TO THE SECULAR SCIENCES, endowed 1878: Rev. John Putnam Gulliver, D. D., LL. D., 1878 —, in office.

TAYLOR PROFESSORSHIP OF BIBLICAL THEOLOGY AND HISTORY, at present assigned to **BIBLICAL HISTORY AND ORIENTAL ARCHEOLOGY**, endowed 1872-89: Rev. John Phelps Taylor, 1882 —, in office.

Besides these professors many assistant instructors and teachers have been employed, sometimes on account of the ill health and sometimes on account of the temporary absence of certain professors, and again in departments in which no permanent professorship had been provided. The endowed lectureships on foreign missions and Congregationalism, have been held by some of the most eminent men of the denomination and have occasioned the publication of many valuable books. A course of lectures is given annually on the Winkley foundation for advanced students, by eminent professors and preachers, selected from various denominations for their attainments in some department which has a theological interest. The recent appointments have been Rev. Robert J. Nevin, D. D., the Rt. Rev. Frederic D. Huntington, D. D., Prof. Theodore W. Dwight, LL. D., Prof. John Williams Burgess, LL. D., President E. Benjamin Andrews, D. D., LL. D., Prof. Jacob Gould Schurman, D. SC., and President Matthew H. Buckham, D. D.

The library was for nearly 60 years in the care of one of the trustees or professors, some of the students being acting librarians, but in 1866 the present librarian, Rev. William Ladd Ropes, was appointed to give his time exclusively to it, and under the present methods of library administration several assistants are employed. The annual increase of books is about one thousand volumes.

An independent church was organized in the theological seminary in 1816, and from that time the professors *ex officio* have been its pastors. Worship was held at first in Phillips Hall, but afterwards in the building erected by Captain Bartlet, where was also the library and the lecture rooms. In 1866 Brechin Hall was erected for the library. In 1875 a separate chapel was built for the Sunday congregation, and in 1879 the Bartlet building was reconstructed for the use of the seminary classes. The church was reorganized in 1865, and is recognized as a Congregational church, though it has many anomalous features. The pastors as such receive no salary; they are not chosen by the congregation, nor installed by a council; there is no parish; all the property belongs to the trustees of Phillips Academy. Officers and pupils of the two institutions are assigned sittings without charge, and the pew rents paid by all others are used by the trustees for the incidental expenses of the services.

One of the auxiliaries of the seminary, though having but little organic connection with it, has been the Andover Press. It has been, and was designed to be, not simply an industrial enterprise, but also an educational and religious force. The main part of its work through all its early history was the printing and publishing of religious literature. When Professor Stuart was making his Hebrew Grammar he was in daily supervision of the compositors. At his instance the Oriental languages began to be printed here, as many as eleven in number, and in 1821 Rev. Dr. John Codman made a donation to the seminary for the purchase of founts of type for work in the Eastern languages. The prin-

cial of the academy and the professors in the seminary are still the "syndics of the Codman press." Some learned societies have their transactions printed here or send here for the use of types which are not found elsewhere in this country. Messrs. Flagg, Gould, Newman, Draper, whose names have been successively identified with this press, printed and issued, it is estimated, more than 400,000 copies of the works of Andover professors, besides many volumes of commentaries and other works of a theological character. The American Tract Society printed its first tracts here. The first temperance newspaper, "The Journal of Humanity," was started here in 1829. "The Biblical Repository" was printed here for a time, and "The Bibliotheca Sacra" was published here for 40 years. At present the city seldom sends to the country to have its books printed, and the country frequently resorts to the city. "The Andover Review," the organ of some of the Andover professors since 1883, is printed in Boston, and "The Bibliotheca Sacra" has migrated to the West, but Mr. Draper still publishes a substantial list of valuable books, and the "Andover publications" are increasing in number every year.

Like many other educational institutions the Andover schools have a quiet resting place for their dead. Just east of the seminary buildings, in a small inclosure sloping to the north and west, in full view of the New Hampshire hills, is the green field in which are buried Professors Woods, Stuart, Porter, Justin Edwards, Bela B. Edwards, Calvin E. Stowe, John L. Taylor, and E. P. Barrows; Principals Osgood Johnson, and Samuel H. Taylor; Professor Robbins, of Middlebury College; President Leonard Woods, jr., of Bowdoin College; Prof. Hiram Mead, of Oberlin Seminary; Prof. Edward A. Lawrence, of the Hartford Theological Seminary; Prof. M. Stuart Phelps, of Smith College; Prof. George C. Merrill, of Washburn College and Phillips Academy; Messrs. James S. Eaton and George H. Taylor, teachers in the academy; Rev. Dr. B. B. Wisner, Rev. Dr. S. C. Jackson, Mr. Daniel Noyes, and Hon. John Aiken, of the trustees; Samuel Farrar, trustee, treasurer, confidential friend, and adviser of the "original founders," and himself a liberal donor; John Dove and Frederic H. Taylor, benefactors; many women and children, clergymen and laymen variously connected with this community, and, most pathetic of all, a row of graves of students who fell sick and died here, most of them far from their homes and in the earlier days before swift conveyance made it possible that they should be buried with their fathers.

The present staff of the seminary (1891) is as follows:

Rev. Edwards A. Park, D. D., LL. D., professor emeritus (1881) of Christian theology; Rev. Egbert C. Smyth, D. D., Brown professor of ecclesiastical history and president of the faculty; Rev. John P. Gulliver, D. D., LL. D., Stone professor of the relations of Christianity to the secular sciences (assigned to library work in 1891); Rev. William J. Tucker, D. D., Bartlet professor of sacred rhetoric, and lecturer on

pastoral theology; Rev. John Phelps Taylor, Taylor professor of Biblical theology and history, assigned to the department of Biblical history and oriental archæology; Rev. John Wesley Churchill, Jones professor of elocution; Rev. George Harris, D. D., Abbot professor of Christian theology; Rev. Edward Y. Hincks, D. D., Smith professor of Biblical theology; Rev. William H. Ryder, "associate" professor of sacred literature; Rev. George F. Moore, D. D., Hitchcock professor of the Hebrew language and literature; Rev. William L. Ropes, librarian; Rev. Selah Merrill, D. D., LL. D., curator of the Biblical museum; Prof. N. S. Sholer, D. D., Winkley lecturer on modern science and religious beliefs; Rev. F. F. Ellinwood, D. D., Hyde lecturer on comparative religion; Rev. Emory H. Bradford, D. D., Southworth lecturer on English Congregationalism.

CHAPTER XI.

A BRIEF HISTORY OF AMHERST COLLEGE.

By Rev. THOMAS P. FIELD, *Class of 1834, formerly Professor in Amherst College.*¹

THE BEGINNINGS OF AMHERST COLLEGE.

It is often difficult to find the origin of institutions. The beginnings of the great universities—such as those of Oxford and Cambridge in England—are shrouded in obscurity. It is now known that the story of the foundation of Oxford University by Alfred the Great is mythical. It is not so with the colleges and universities of America. We know their origin; and the history of their early struggles and efforts to impart a liberal education is exceedingly interesting and instructive.

This is emphatically true of the history of Amherst College.² Though

¹ I desire to express my great indebtedness in the preparation of the following brief sketch of the history of Amherst College to the very full and elaborate history of the college by Prof. William S. Tyler, which is extended as far as to the administration of President Seelye. Without that work I should not have been able to write what I have written. Any one who wishes a more detailed account of the college will find it there presented in a most interesting and attractive form. I fear that the necessity of being brief has prevented my doing full justice to some departments of the college; but I have done what I could.

T. P. FIELD.

AMHERST, MASS., November, 1889.

LIST OF PRINCIPAL PUBLICATIONS RELATING TO HISTORY OF AMHERST COLLEGE.

Tyler, W. S. *History of Amherst College, 1821-1871.* Springfield, Mass., 1873. 8vo, pp. 671.

Montague, W. L. *Biographical Record of the Alumni and Non-Graduate Members of Amherst College, 1821-1871.* Amherst, 1883. 8vo, pp. 489 and 188.

Hitchcock, Edward (President). *Reminiscences of Amherst College.* Northampton, 1863. 12mo, pp. 412.

[Cutting, G. R.] *Student Life at Amherst College.* Amherst, 1871. 8vo.

Exercises at the Semi-Centennial of Amherst College, July 12, 1871. Springfield, Mass., 1871. 8vo, pp. 149.

Opening of Walker Hall, 1870. Boston, 1871. 8vo, pp. 77.

Roll of Graduates and Undergraduates of Amherst College who served in the Army or Navy of the United States during the War of the Rebellion. Amherst, 1871. 8vo, pp. 48.

Constitution and System of By-Laws of the Charity Fund of Amherst College, with an historical appendix. Amherst, 1881. 8vo, pp. 36.

Power and Progress of Cultivated Mind. By R. W. Marsh. [Article in *Potter's American Monthly*, December, 1877.]

Evolution of a College Republic. By Mrs. S. Houghton. [Article in *Education*, April, 1886.]

Preparation for Citizenship at Amherst College. By Prof. Anson D. Morse. [Article in *Education*, December, 1888.]



AMHERST COLLEGE.



it has grown to be a great institution its beginnings were small, and its founders had to be men of self-denial and courage and faith.

Amherst College originated in a strong desire on the part of the people of Massachusetts to have a college near the central part of the State, where the students should be free from the temptations of a large city, where the expenses of an education should not be beyond the means of those who had but little money, and where the moral and religious influences should be of a decidedly Christian character. Even in the last century efforts were made to found a college in Hampshire County, in Massachusetts, efforts that were opposed, at that time, by some of the friends of education in the eastern part of the State, and which were wholly discontinued when attention was turned so intensely to the political affairs which issued in the American revolution. But early in the present century the feeling of the need of another college awoke again. Harvard college was thought to be too near Boston. The expense of living there was too great for the many who desired a collegiate education, and the college was entirely under the control of the Unitarian denomination of Christians. Williams College would have been satisfactory to the people, but it was far away in the northwest corner of the State. It was at that time difficult of access, and attracted students rather from New York and Vermont than from Massachusetts. There seems to have been a very prevalent feeling that somewhere in Hampshire County was the place for a new college. Many distinguished men who had been themselves identified with educational interests had lived in that county, such as Jonathan Edwards in Northampton and Noah Webster in Amherst. Professor Tyler in his History of Amherst College says:

Hampshire County has long been the banner county of the State in its educational and religious history. Statistics show that it exceeds any other county in the proportion both of its college students and church members, and whether as cause or effect, or more likely both cause and effect, of this, it is now equally distinguished for the number and character of its higher educational institutions.

The ministers of Franklin County, at a meeting held in Shelburne May 18, 1815, expressed it as their opinion that a literary institution of high order ought to be established in Hampshire County, and that the town of Amherst appeared to them to be the most eligible place for it. Their early efforts for a literary institution in Hampshire County resulted in the first place in the establishment of an academy in Amherst, which was incorporated in the year 1816, and which became at once, and continued for a number of years to be, one of the most prosperous and successful of the academies of the State. This academy was open to the admission of both sexes. Many who became men of great influence received a part of their education there; and of women mention may be made of Miss Mary Lyon, the founder of the Mount Holyoke Female Seminary, who was a pupil at Amherst Academy in 1821.

But an academy, as ordinarily endowed, did not fully meet the wants

of those interested in education in central Massachusetts. It was proposed, at first, to raise a fund for the academy as an aid to indigent young men who wished to obtain a liberal education that would fit them for the Christian ministry, and to appoint a professor of languages for their instructor. But further consideration led the friends of education to see that more than this would be necessary to give such an education as the Christian ministry required; and their plans were enlarged to secure a fund that should be the basis of an institution of a higher grade than an academy—an institution which, indeed, in their thought of it, was virtually a college.

In the year 1818 a constitution was adopted by the trustees of Amherst Academy, for the raising and management of a fund of at least \$50,000, for the classical education of indigent young men of piety and talents for the Christian ministry. This constitution states with great particularity how this money, when raised, is to be controlled and appropriated. No persons could have been more careful and exact in their specifications if they had proposed to raise and use \$50,000,000 than were these friends of education in their purpose to raise and manage \$50,000 for the noble ends they had in view. And, indeed, the effort to raise \$50,000 at that time required more faith and courage than would the attempt to raise a million for such an object now. But their purpose did not slumber in the mind. They went to work with a will, and their efforts were, after astonishing zeal and perseverance and self denial, crowned with success. In July, 1818, a committee appointed to examine the subscriptions to this charity fund, reported that the money and other property amounted, at a fair estimate, to \$51,404. This charity fund may be said to be the basis of Amherst College, for though it was raised by the trustees of Amherst Academy it was really intended to be the foundation of a college, and has always been a part of the permanent funds of Amherst College, kept sacredly from all other funds for the specific object for which it was given. A special board of overseers have charge of this fund, and vigilantly inspect and direct its investments and disbursements.

By the constitution and by-laws of this fund, one-sixth of the interest is to be added annually to the principal, so that it has now (1889) reached the sum of about \$82,000. This was for many years the only permanent fund of Amherst College, and without this it would have seemed impossible at one time to preserve the very existence of the college. So Amherst College grew out of Amherst Academy, and was built permanently on the charity fund raised by the trustees of that academy.

But the sum of \$50,000 is a very insufficient pecuniary basis for a collegiate institution. Professors' salaries are to be paid, buildings to be erected, a library to be gathered, philosophical apparatus to be purchased, and many other things to be done that call for the use of much money. The founders of Amherst College had no narrow views of edu-

cation. They intended to have an institution at Amherst that would furnish as good an education as could be obtained at any institution in the land. Although their primary object was to fit young men for the Christian ministry they believed the Christian ministry demanded for its successful work the largest and most liberal education possible to be obtained. They intended to provide means for giving as good a classical, mathematical, philosophical, as well as Christian education as could possibly be furnished. Fifty thousand dollars would do but little toward giving what they desired to give to students. The times were hard; money was scarce; large fortunes, even as fortunes were then estimated, were rare in the Christian community. But the difficulties and obstacles they saw before them did not discourage nor daunt them. They went forward with a faith that could remove mountains.

Although the charity fund of \$50,000 had been received in 1818, it was not till 1820 that the recipient felt justified in going forward to erect buildings for a college in Amherst. Efforts were made for the removal of Williams College from Williamstown to Hampshire County, and to have the charity fund used in connection with that college; and, if that were done, it was not certain that Amherst could be regarded as the best location for the college. But the legislature of Massachusetts decided that Williams College could not be removed from Williamstown, and nothing remained but for the friends of the new institution to go on with their plans for locating it at Amherst. A lot of land, containing 10 acres, on which buildings might be erected, was given by Elijah Dickinson, esq., of Amherst, and, in the summer of 1820, a building of brick, 100 feet long by 30 wide, and four stories in height, was erected. The erection of this first building was, in a great measure, the work of the inhabitants of the town of Amherst and the neighboring villages. So eager were they in their desire for a college that they, in large numbers, gave their gratuitous labor for this object. People from the neighboring town of Pelham sent stone for its foundation from their quarries of granite; lime, sand, and lumber were freely provided. The farmers furnished teams and laborers, and on the hill where the college is situated were voluntary workmen in abundance, toiling by day and camping on the ground by night, ready for early work in the morning. Never was more enthusiasm manifested by any people for the establishment of an institution of learning.

Noah Webster, who was at that time the president of the board of trustees of Amherst Academy, says:

Notwithstanding the building committee had no funds for erecting the building, not even a cent, except what were to be derived from gratuities in labor, material, and provisions, yet they prosecuted the work with untiring diligence. Repeatedly during the progress of the work their means were exhausted, and they were obliged to notify the president of the board that they could go no further. On these occasions the president called together the trustees, or a number of them, who, by subscriptions of their own and by renewed solicitations for voluntary contributions, enabled the committee to prosecute their work.

This first college edifice was ready for occupation and dedicated on the 18th of September, 1821. In the month of May, 1821, Rev. Zephaniah Swift Moore, D. D., was unanimously elected by the trustees of Amherst Academy president of the new institution. Dr. Moore was, at that time, president of Williams College. He had thought it desirable that Williams College should be removed to a more central part of the State, and when he found that that could not be done he resigned the office of president of Williams to be at the head of the new institution at Amherst. At the same time he expressed the desire that the institution should not be limited in its students to those who were indigent or preparing for the Gospel ministry, but that it might be open to any who wished to obtain a classical education, and that the education should not be inferior to that given by any of the colleges of New England. The trustees agreed with the views of President Moore on that subject, and gave notice that young men who expected to defray the expenses of their education would be admitted to the collegiate institution on terms essentially the same as those prescribed for admission into other colleges in New England.

About a month after Dr. Moore had been chosen president of the institution, Gamaliel S. Olds was appointed professor of mathematics and natural philosophy, and Joseph Esterbrook professor of the Greek and Latin languages. The inauguration of the president occurred on the 18th of September, 1821, and on the next day the college was organized and opened with the admission of 47 students, some into each of the four regular classes, "a larger number, I believe," says Dr. Humphrey, "than ever had been matriculated on the first day of the opening of any new college." Of this number 15 followed Dr. Moore from Williams College to Amherst, partly, perhaps, from affection for Dr. Moore, and partly because they thought Amherst the better place for a college. Such were the beginnings of Amherst College.

THE ADMINISTRATION OF PRESIDENT MOORE.

Zephaniah Swift Moore, the first president of the college, was born in Palmer, Mass., November 20, 1770. He graduated at Dartmouth College in 1793. On leaving college he became principal of an academy in Londonderry, N. H., for one year. He then studied theology with Rev. Dr. Backus, of Connecticut, and, on completing his theological studies, was called to the pastorate of a Congregational Church in Leicester, Mass., where he continued till 1811, when he was appointed professor of languages in Dartmouth College. For 4 years he was a highly successful and influential instructor in that college. In 1815 he was elected to the presidency of Williams College, where he remained until he was chosen president of the collegiate institution at Amherst.

President Moore was admirably adapted to the place to which he was called. He was a good scholar, for his day, in the classical languages, and deeply interested in the mental, moral, and physical sciences. He

had comprehensive views of the nature and methods of a true liberal education. He was himself a practical and efficient instructor. He combined a remarkable dignity of character with suavity of manner. He maintained authority, but ruled mainly by gentleness and love. He was popular with students, as was seen in the fact of his drawing students with him to Amherst when he left Williamstown.

It would seem as if at the beginning of the college the advantages for an education must have been very imperfect. But there was at first the professor of mathematics, the professor of languages, and a tutor, Mr. Lucius Field. The president gave instructions in mental and moral philosophy, and in rhetoric. In these branches of study the students found the main things requisite for mental culture and discipline. Their teachers were competent instructors in their departments. The students came to Amherst because they wanted an education and were willing to work for it. They brought with them no surplus of money and they were not obliged to spend much money. They could obtain board in the village for from \$1 to \$1.50 a week. Wood for fuel cost from \$1.50 to \$2 a cord, and they could saw and split it for themselves. Term bills were about \$10 a term. Young men with very limited pecuniary means could come to Amherst and get a good education, and they did come. The number of students rapidly increased. While the college opened in 1821 with 47 students, in the second year it more than doubled that number, having 98. Events proved that the college met a decided want in the community. In the second year another building was erected to provide rooms for the increasing number of students. Soon after the opening of the college Prof. Amos Eaton, who was one of the earliest teachers in our country of botany, geology, and other natural sciences, and whose *Manual of Botany* had a wide circulation, became a lecturer in the college on chemistry and other branches, and gave a decided impulse to the study of natural sciences in the early history of the college. It was with much of earnestness and enthusiasm that the college began its course under the administration of President Moore, and it was going forward most successfully when Dr. Moore was very suddenly attacked with disease and died on the 29th of June, 1823, after having presided over the college only about two years.

His death was the cause of deep grief to the students and the friends of the college generally. It was felt that a severe blow had fallen upon the youthful institution, and that no one could be found to fill the place of the departed president.

Dr. Moore, in his brief presidency, did a good work for the college. He gathered to it a body of able and excellent young men. He inspired them with a love of knowledge; and more than that, he made them feel that a good Christian character was better than the largest acquisitions of knowledge. He intensified the religious purpose which the founders of the college had in view, and in the short term of his presidency aided in training a number of young men who became eminent as teachers,

ministers of the gospel, and men of science, among whom may be mentioned David O. Allen, a missionary, and author of a history of India, Bela B. Edwards, professor at Andover, and Profs. Ebenezer S. Snell and Charles U. Shepard, who taught many generations of students in the natural sciences.

ADMINISTRATION OF PRESIDENT HUMPHREY.

Although the friends of the college were much discouraged by the death of Dr. Moore, yet their attention was very soon turned unanimously to the Rev. Heman Humphrey, D. D., of Pittsfield, Mass., as a suitable person for a successor. Dr. Humphrey had not been a practical educator, as Dr. Moore had been. He had not much experience in instructing and managing young men; but he was known to be a man of superior abilities; a successful pastor of one of the largest parishes of the State, a good preacher, a wise counsellor, a man deeply interested in missions, temperance, and all the great moral and religious enterprises of the church, and one who had already evinced a heartfelt desire for the growth and prosperity of Amherst College. He was therefore chosen in July, 1823, to be the successor of Dr. Moore.

Heman Humphrey was born in West Simsbury, Conn., March 20, 1779. He graduated at Yale College in 1803, studied theology with Rev. Asahel Hooker, of Goshen, Conn., and was licensed to preach in October, 1806. He was settled in Fairfield, Conn., March 11, 1807, where he remained 10 years, when he was called to the First Church, in Pittsfield, Mass., of which he was pastor 6 years.

Dr. Humphrey came to Amherst in the maturity of his powers. But not having the experience of Dr. Moore, and wanting some of the more courtly ways of his predecessor, he was at first unfavorably compared with him, but when the writer of the present sketch, who graduated in 1834, was in college, no one in the faculty was more revered and honored than Dr. Humphrey. In accepting the presidency he took upon himself a great burden of responsibility, and it required peculiar skill and influence to establish on a solid foundation and carry forward successfully the affairs of that young institution at that day. It is greatly to the credit of Dr. Humphrey that he succeeded as remarkably as he did. When he gave his inaugural address it was seen that at all events he had the true views of education, and knew how to express them. Certainly there have been few, if any, addresses made in our country that contain more practical wisdom and solid sense than the address of Dr. Humphrey at his inauguration to the presidency of Amherst College.

The number of students when Dr. Humphrey became president was one hundred and twenty-six. Amherst College was wonderfully popular. But one of the drawbacks to its success was that it was without a charter from the State, by which it could confer academical degrees upon its graduates. Men might go from the institution with as good

an education as Harvard could give, but could have no such diploma as could be had from Harvard or Williams. Dr. Humphrey and the trustees of Amherst College felt that such a condition of things must be remedied as speedily as possible. During the administration of Dr. Moore efforts were made to obtain a charter, but without success. At the beginning of the administration of Dr. Humphrey more urgent and persistent efforts were made for the same object. It seems strange to us now that there should have been any objection to giving a charter to such an institution as Amherst College. But many objections were presented and vehemently urged. It was maintained by the friends of both Harvard and Williams that no other college was needed in the State, and that chartering another college would withdraw students from those colleges, and so be an injury to them.

Even the friends of Brown University, at Providence, opposed the giving a charter to Amherst, because many of the students from Massachusetts went to Brown, and it would injure that university. Some maintained that the endowments at Amherst were not sufficient to justify the hope that a college would be prosperous there, and that there would soon be application to the State for pecuniary aid.

But the most bitter hostility to Amherst arose from the thought that it was an institution designed primarily for the education of young men for the Christian ministry. Harvard was governed by the Unitarians, and the Unitarian controversy was at its height. The Unitarians, particularly those in the vicinity of Boston, where they had a preponderating influence, were set against the founding of a college in the State that should be under Trinitarian influences. The members of the Unitarian denomination in the vicinity of Boston were, many of them, men of high intellectual culture, who exerted great influence in the community, and they succeeded for a time in keeping the legislature from granting a charter to Amherst College. Bitter speeches were made against the institution in the legislature of Massachusetts and persistent efforts put forth to stir the enmity of the people against it. But the bitter speeches and the inimical efforts only increased the enthusiasm of the friends of the college and raised up for it new friends, some even among the Unitarians themselves in the interior of the State, who felt that a college was needed in that region, and that the opposition to Amherst was wholly unjust. Even the political complexion of the legislature was changed somewhat by the friends of Amherst, for they determined to vote for those men and that party that would be favorable to Amherst. And at last a legislature was secured that voted to give Amherst a charter. That was in February, 1825. It is said that William T. Eustis, of the Democratic party, was elected governor of Massachusetts in opposition to the candidate of the Federal party by the votes of the friends of Amherst. And when, after the election, he was taunted by Mr. Otis, the Federal candidate, with favoring orthodoxy in order to get the votes of the orthodox people, he replied that he did

believe in the doctrine of *election*. In order to satisfy some of the hostile elements of the legislature, it was found necessary to agree that five out of the seventeen trustees should be chosen by joint ballot of the legislature in convention of both houses, a provision that was after some years changed so as to permit these five to be chosen by the alumni of the college.

The stern opposition that had been manifested in some quarters to the college turned the attention of the people to it, and Amherst College was increasing in the number of its student all the time that this opposition was showing itself.

Still the institution was suffering greatly from want of money, and much of the time of President Humphrey and some of the other officers of the college had to be spent in efforts to raise the pecuniary means requisite to carry forward the enterprise successfully. The legislature of the State was urged by petition to grant pecuniary assistance, as such assistance had been given to Harvard and Williams and other literary institutions, but the petition was for many years rejected. Then the friends of the college rallied and the sum of \$50,000 was obtained by subscription in 1832. But that was by no means sufficient for the wants of the college, and it was found necessary to appoint financial agents; first, Rev. William Tyler, then Rev. Joseph Vail, who labored from 1839 to 1845, and \$50,000 more were obtained in that manner. Thus, by self-denials and struggles on the part of the friends of the college, it continued to do its good work during the administration of Dr. Humphrey.

The course of study and discipline throughout that administration was very nearly the same as in all other New England colleges. The Latin and Greek languages, mathematics, physics, rhetoric, mental and moral philosophy, with something of chemistry, geology, and botany formed the main branches of study. All the students pursued the same course of study. There were no elective studies. There were few lectures, except experimental ones in physics and chemistry. There were regular study hours appointed for the students and hours for recitation or lecture for all at the same time. The chief business of the teacher seemed to be to see that the student learned his lesson well with as little help from the teacher as possible. The student was expected to work out his translation and his mathematical problems for himself. The object of the college was declared to be not so much the accumulation of knowledge as the discipline of the mind. The mind must learn how to think and reason by thinking and reasoning for itself. So every stimulus was applied to make the pupil study. By marks for excellence, by honorary appointments at exhibitions and commencements, the ambition of the student was appealed to. Incidentally knowledge was, of course, communicated by the tutor or professor. But it did not seem to be the object of tutor or professor to

give the student knowledge, but rather to see that the student exerted his powers faithfully to get the knowledge for himself.

And many excellent scholars were made in that way and mental discipline was acquired. In rhetoric very little positive instruction was given; but the students were required to write many essays and to engage frequently in extemporaneous debates. The three literary societies, "Athenia," "Alexandria," and "Social Union," were in reality rhetorical societies, so that much work was done of a rhetorical nature, and some of the best orators of the country, such as Henry Ward Beecher, Richard S. Storrs, Roswell D. Hitchcock, and Alexander H. Bullock, received their training in rhetoric at Amherst during the administration of Dr. Humphrey.

For the general regulation of the college there was the exercise of authority on the part of the faculty and the demand for obedience on the part of the students. Attendance was required in recitation room, church, and chapel. Little was left to the free will of the student. The professors were executive officers, and there were penalties of fines, suspension, or expulsion for disobedience. Essentially the disciplinary methods of the school and the academy were continued in the college. The students were regarded as boys to be spurred to effort, encouraged to obedience, and restrained from evil ways. Dr. Humphrey was an excellent presiding officer for such methods. He had good sense, good judgment, great firmness of will, and a sincere desire for the good of the students. He had the qualities to command respect and veneration, and he was inflexible in his determination to have the laws of the college obeyed. With refractory students he would come into collision, but the student had to bend to his authority. While Dr. Humphrey and the professors of his time went on essentially after the old methods of instruction and discipline, they were still willing to try anything new that would be helpful in education. There arose in the early part of the administration of Dr. Humphrey a feeling among the friends of the college, which was shared by a number of the members of the faculty, that there might be a beneficial change in the curriculum of college study. Many thought that too much attention was given to the Latin and Greek languages, and that it would be advisable to substitute for them the modern languages, particularly French, German, and Spanish, and devote more time to English literature and the natural sciences. Accordingly a parallel course of study in harmony with these views was drawn up by the faculty and adopted by the trustees in 1827. Immediately quite a large number of students entered the college with the intention of taking the parallel course, and became students in modern languages instead of the ancient ones; but a difficulty was found in getting competent teachers in modern languages. There was not a sufficient number of teachers for the two courses. Some of the faculty were not enthusiastic in favor of the change, and the plan did not secure so much of the public favor as was expected. So after a trial of about a year the new plan was aban-

done, and the old curriculum, essentially that of all the colleges, was returned to. Amherst was, I believe, the first college to try the dispensing with Latin and Greek in the collegiate course, and the experiment was not successful. Whether later trials in other colleges will succeed better, time alone can determine.

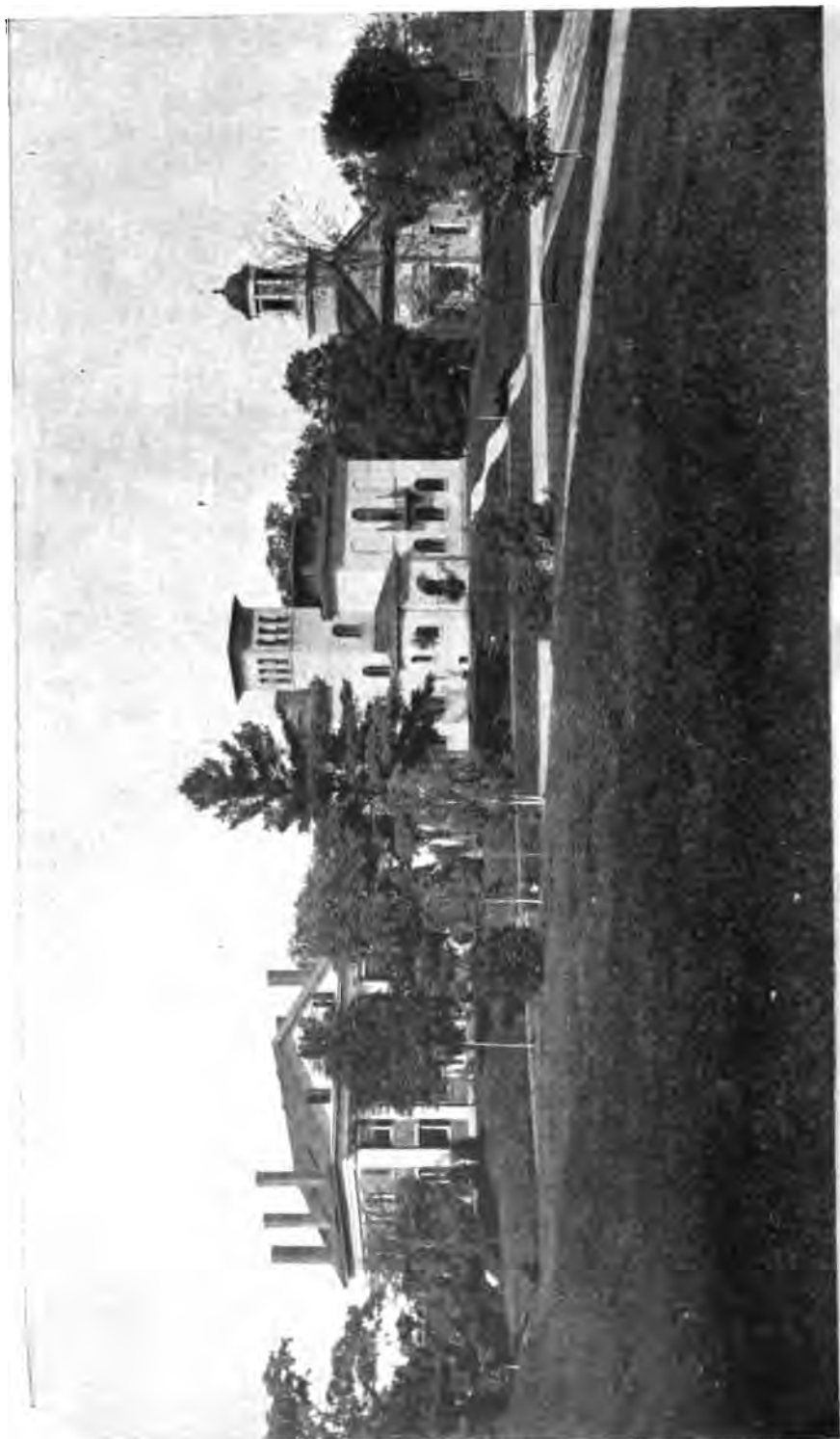
The professors who worked with Dr. Humphrey in his administration were young men, but men of ability and zeal in their calling, and some of them, such as Edward Hitchcock, Ebenezer S. Snell, Jacob Abbott, and William S. Tyler, became eminent in science or literature.

The college prospered on the whole remarkably under Dr. Humphrey. New buildings—a dormitory and a chapel—were erected. A good apparatus for experiments was obtained and the library much enlarged, and through the influence of Dr. Hitchcock, cabinets of natural history were begun. But the college was all the time cramped through want of money, and found it difficult to meet the growing needs of education in our country. The president of the college had to bear the most of the burden of this. If a college wants money, the president must get it, and President Humphrey did not seem to be able to get all that was needed. Some, moreover, began to say that the methods of Dr. Humphrey were too rigid and authoritative, and that the democratic spirit of our country required a less monarchical system of government. Expenses of education were increasing at Amherst. Subjects of discussion, such as slavery, divided the students into parties. For these, and other reasons, about the year 1840, Amherst seemed to be losing somewhat in the favor of the community, and after 2 or 3 years, a feeling arose that there must be a change in the presidency. Dr. Humphrey became aware of this feeling, and with the manliness and self-respect which were his, he determined to resign the position which he had held with so much ability and success. In the year 1844 he gave his resignation into the hands of the trustees, and it was accepted. But it was a good thing for Amherst that it had, at the beginning of its chartered existence, a man at its head so wise, so faithful, so zealous, so broad in his views of education, and so comprehensive, philanthropic, and Christian in his desires for the welfare of his fellow men. The alumni of Amherst College do well to keep in reverential memory the name of Heman Humphrey.

ADMINISTRATION OF PRESIDENT HITCHCOCK.

At the time of Dr. Humphrey's resignation the financial condition of the college was such that it was difficult to find a man of reputation and fitness for the place who was willing to accept the presidency of Amherst College. Professor Park, of Andover, was chosen, but declined the appointment. Professor Shepard, of Bangor Theological Seminary, was then chosen, but he also declined the appointment. Then Dr. Edward Hitchcock, a professor in the college, was elected,





AMHERST COLLEGE - LIBRARY.

and although it was at first supposed that he had not the peculiar qualifications requisite for a president of a college, yet it was found, after trial, that no better appointment could possibly have been made.

Edward Hitchcock was born in Deerfield, Mass., May 24, 1793. He was principal of the academy in his native place, 1815-1818; was pastor of the Congregational Church in Conway 4 years; was professor of chemistry and natural history in Amherst College August 23, 1825, and was chosen president of the college December 11, 1844.

Thus Dr. Hitchcock had been for nearly 20 years connected with the government and instruction of the college when he became its president. He had seen its growth from the first, and identified himself with its history. During that time he had become eminent as a geologist, was State geologist of Massachusetts, and had written and published much not only on geology but on other branches of science. He had received the degree of doctor of laws from Harvard University, and had acquired reputation as a scientist in Europe.

It was feared at first that Dr. Hitchcock might not hold a sufficiently firm hand in the government of the college, but the time had come for an administration of a somewhat different kind from that of Dr. Humphrey. Dr. Hitchcock did not like to use severe measures; he preferred milder ones, but he really governed the college by the milder measures, and governed it better than it could have been governed in any other way. Students revered and admired Dr. Hitchcock for his eminent ability as a man of science at a time when science was rapidly advancing and receiving increasing attention from year to year. The scientific eminence of Dr. Hitchcock became more conspicuous when he was made president of Amherst College, and itself did much to increase the reputation of the college in this and other lands. At the same time Dr. Hitchcock had the spirit of self-denial and self-sacrifice, peculiarly requisite in a president of Amherst College at that time. When he became president it was determined that the college should no longer run into debt to meet its current expenses. He proposed that the income of the college from its invested property and term bills should be used to defray the current expenses of the college under the direction of the president and professors, and if that income was not sufficient to pay the full salaries of the officers the amount of the income should be divided proportionately among them.

On the very day of the inauguration of the new president, Hon. Samuel Williston, of East Hampton, Mass., gave \$20,000 for the endowment of the professorship of rhetoric and oratory. Shortly after, Mr. Williston gave \$30,000 more to the college, and Samuel A. Hitchcock, of Brimfield, \$10,000. Not long after, the State of Massachusetts voted a donation to the college of \$25,000. Liberal donations were made about the same time by Hon. David Sears, of Boston, who had been informed of the labors and self-denial of the professors at Amherst. Thus the pecun-

iary aspect of affairs relating to the college began suddenly to change.

Says Dr. Hitchcock in his reminiscences:

See now how altered was the condition of the college. More than a hundred thousand dollars had flowed in upon it in endowments and buildings in a little more than 2 years. Our debts were cancelled and available funds enough left to enable us to go on, with economy, from year to year, and with increased means of instruction.

The hearts of the trustees, the alumni, and the students were greatly cheered, and it was felt that Amherst College was now established on a sure foundation and could never be overthrown. Soon a new library building was erected and an astronomical observatory, and the college, which had been for years greatly depressed for lack of money, entered upon a new period of prosperity.

Dr. Hitchcock proved to be an excellent administrator of the affairs of the college, but one of his chief services consisted in securing the interest of Samuel Williston in its welfare, who became one of its trustees, and by his large and timely benefactions so helped the college that Dr. Hitchcock was exceedingly desirous that the name "Williston" should be given to the institution, which the alumni of the college, while deeply grateful to Mr. Williston and appreciative of his benevolence, have never been willing to do.

Dr. Hitchcock having thus succeeded in getting such endowments for the college as would insure its further growth and prosperity expressed to the trustees a desire to give the presidency into other hands. But the trustees would not listen to that proposition. The office of president was one exceedingly distasteful to Dr. Hitchcock. He did not like the details and drudgery of such administration. He felt, moreover, that his scientific attainments would enable him to be more useful in some other sphere of labor. He was desirous to bring the facts of science to bear upon the great question of religion and theology. He had projected a work on natural theology, which he intended to be the great work of his life, but which he thought he could not write if he remained president of Amherst College. Still, it may be doubtful whether Dr. Hitchcock could have done any better or more useful service to the church and to society than he did by continuing for a while in the presidency. Had Dr. Hitchcock devoted his time to the preparation of a work on natural theology he could not have anticipated the form which the discussions of a later day would take on that subject. He could not anticipate the changes which Darwinism and other theories of evolution would cause in the treatment of natural theology. Consequently his work, while it would have been able for his day, could not have met the want of students of this day much better than the work of Paley on the same subject does. He was mistaken, we think, in supposing that such a permanent memorial of his studies could be of more worth than anything else he could do. What was of permanent worth in his scientific pursuits and investigations will be found recorded in his printed works as they exist, but his great work consisted in stimulating

his students to enlarged and independent study of science and in inspiring them with the thought that all science is illustrative of the being, character, and providence of God. "He builded better than he knew." And in the work which he did as president of the college we think he did the most important work of his life. But he could not be induced to remain in it very long, and in 1854 he resigned the office, giving as his reason the inadequacy of his health to sustain the labors, especially those pertaining to the government of the institution. Thus ended the administration of Dr. Hitchcock.

ADMINISTRATION OF PRESIDENT STEARNS.

On accepting the resignation of Dr. Hitchcock, the trustees voted to retain his services as professor of natural theology and geology, for which he expressed a desire to receive as compensation only half the usual salary of a professor.

At the annual meeting of the board of trustees in August, 1854, Rev. William Augustus Stearns, D. D., of Cambridgeport, was chosen president and professor of moral philosophy and Christian theology. Dr. Stearns was born in Bedford, Mass., March 17, 1805. He graduated at Harvard College in 1827, studied theology at Andover, was ordained, and settled as pastor at Cambridgeport in 1831, where he remained until he was chosen president of Amherst College. Dr. Stearns had been an excellent pastor, was a very acceptable preacher, a man of good judgment and good taste. His education at Harvard and pastorate at Cambridgeport had brought him into intimate relations with many men eminent for culture and literary attainments. He had a high appreciation of beauty in art, of refinement in literary style, and expressiveness in oratory. It was thought by many of the alumni that it would be well to have as president a graduate of Cambridge, whose presence and influence might add something more of refinement and finish to the solid education of the country college at Amherst. And the friends of the college were not disappointed in that particular. During the administration of Dr. Stearns many new buildings were erected, such as the Appleton Cabinet, Williston Hall, Walker Hall, and the college church edifice, all far superior in architectural beauty to any heretofore existing on the college grounds.

No very important change in the curriculum of study, or in the general discipline of the college, occurred during the presidency of Dr. Stearns, but he was highly successful in obtaining money for the college, nearly \$800,000 having been added to the available funds of the college while he was president. More than fifty scholarships, varying in income from \$50 to \$300, were established, and money was given for annual prizes for excellence in the various departments of the college.

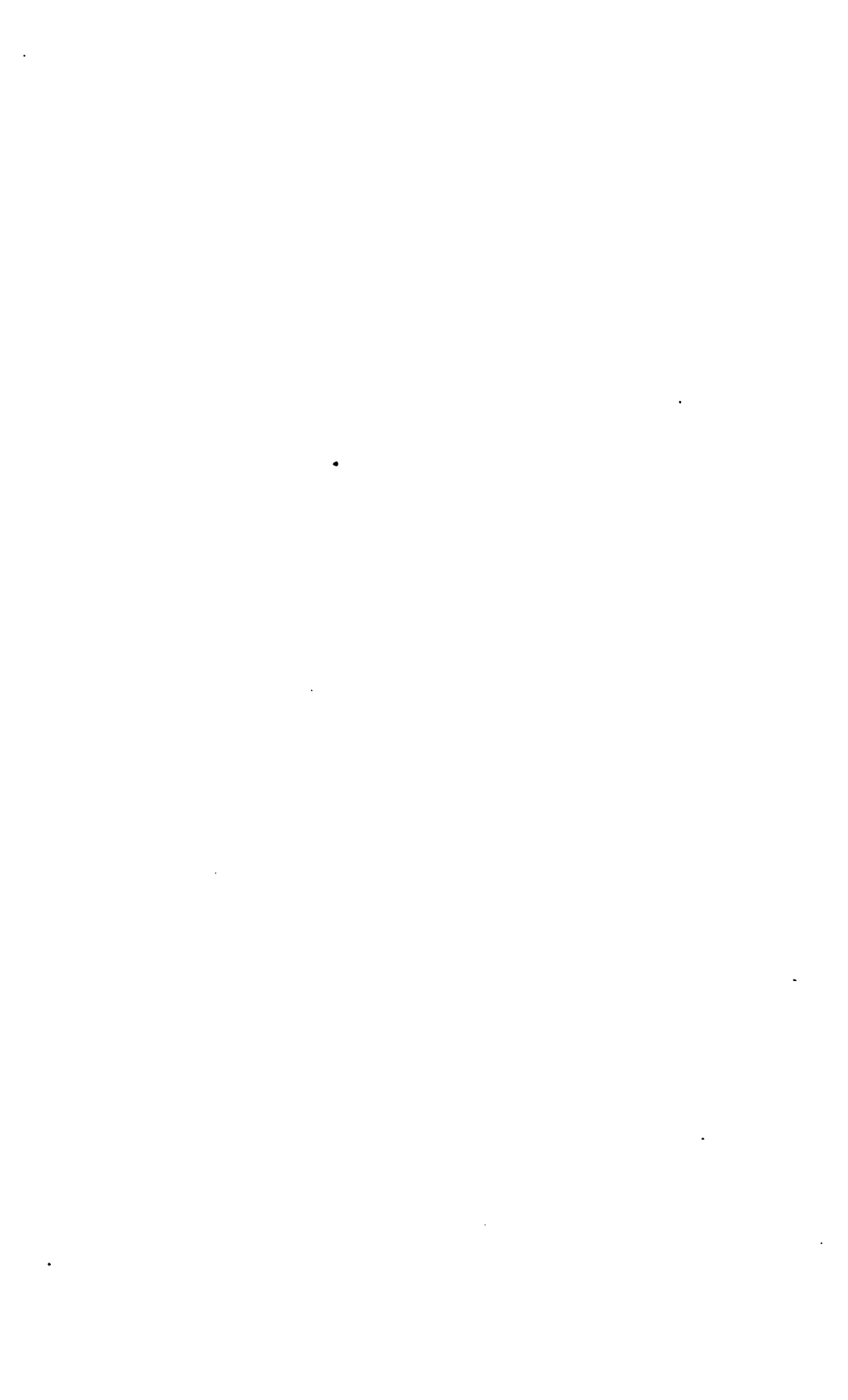
One highly important department of instruction began under his efficient influence, and has been continued with great success—that of hygiene and physical education. Dr. Stearns had a strong conviction

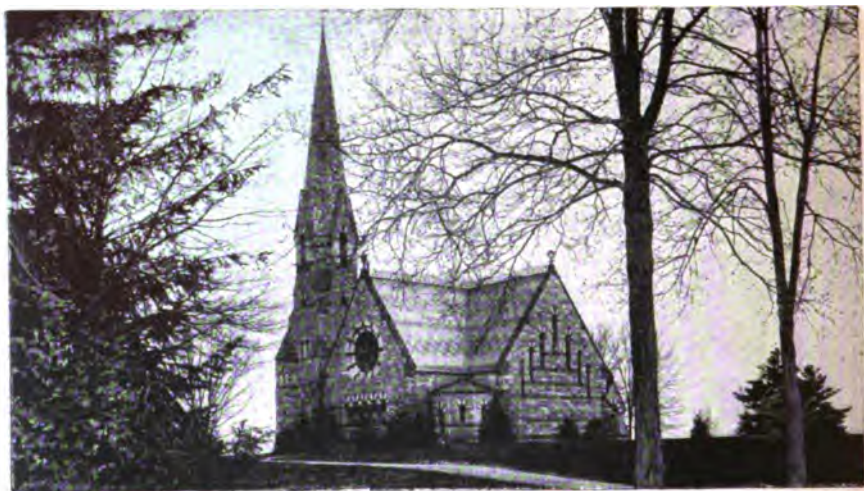
that students needed systematic training in physical culture. He pressed the matter on the attention of the trustees. He urged them to erect a gymnasium and appoint a professor of physical education; and he accomplished his object. In 1860 a building was completed mainly through the liberality of Dr. Benjamin Barrett, of Northampton, who contributed \$5,000 for the purpose, and from whom it was named the Barrett Gymnasium. John W. Hooker was chosen the first professor in that department, but he remained in it only a few months. In 1861 Dr. Edward Hitchcock, son of President Hitchcock, a graduate of the college and of Harvard Medical School, was appointed professor in this department. He has continued in it to this time, and has succeeded in giving an excellence and efficiency to physical training in Amherst which we think is not equaled in any institution of learning in the country. Regular drills in physical exercise are required in all the classes, and the effect is seen in the general good health and physical vigor of the students of Amherst. Dr. Hitchcock has exhibited rare qualifications for the place he has occupied. He has not only drilled the students in the exercises necessary for their bodily health, but he has been perpetually watchful and solicitous for their welfare generally, and has given them the counsel and advice needed to keep them in the best condition for study and mental and moral improvement.

The services of the professor of hygiene have been invaluable to the college, and are a model of what such services might well be in every college.

Another department, that of mathematics and astronomy, received a remarkable accession to its means of influence during the presidency of Dr. Stearns. This was the result of a large donation of money, given expressly for the use of that department, by Dr. William J. Walker, of Newport, R. I. Dr. Walker was born in Charlestown, Mass., March 15, 1790, and died in Newport, April 2, 1865. He practiced medicine many years in his native town, was the physician and surgeon of the Massachusetts State Prison and consulting surgeon of the Massachusetts General Hospital. Through the influence of Dr. Stearns he was induced to make donations and legacies to Amherst College amounting to about a quarter of a million of dollars. He established the Walker Professorship of Mathematics and Astronomy, in 1860; Walker Instructorship, in 1862; Walker prizes for excellence in Mathematics, in 1863; and the Walker building fund, in 1864, the result of which last was the erection of the finest building on the college grounds—Walker Hall. His benefactions have been of the greatest service to the college, and will always call forth the grateful remembrances of the alumni to Dr. Stearns as well as to Dr. Walker.

Another new department which began its operations under the presidency of Dr. Stearns was that of "Biblical history and interpretation and pastoral care," as the result of a donation of \$20,000 from John Tappan, of Boston, for the establishment of a professorship with that





AMHERST COLLEGE—CHURCH



AMHERST COLLEGE—WALKER HALL



title. It was the opinion of Mr. Tappan that the students did not receive sufficient pastoral care, and that there should be a Christian minister in the college, whose special and almost exclusive attention should be given to their moral and spiritual need. For this object he endowed the professorship, making a condition that Dr. Stearns should perform the duties, and have the avails of the professorship during his life. As Dr. Stearns was already pastor of the college church, this endowment of a new professorship of pastoral care made no perceptible change in the college while he lived. But in addition to this a new means of aiding in the pastoral work was found in the erection of the college church edifice. The pecuniary means for this were furnished by a son of Dr. Stearns, Mr. William F. Stearns, who gave a sum which amounted in the end to \$50,000 for the building of a church for the college. Mr. Stearns thought—as did his father, the president—that the religious exercises of the Lord's day should be in a house consecrated exclusively to religious purposes, instead of one where the students were in the habit of congregating for rhetorical and other exercises as well as those of religion. By means of this donation of Mr. Stearns a beautiful stone edifice was erected on a fine site of the college campus, and it has contributed greatly to the enjoyment and profit of the students as well as the faculty of the college. It ought also to be mentioned that during the administration of Dr. Stearns an art gallery in which were placed casts of the most famous statues of the world, and photographs of the finest buildings and most beautiful pictures, was begun through the influence of Professor Mather, whose lectures on art have formed one of the most interesting series of lectures in the college course.

Thus it will be seen that the administration of Dr. Stearns was characterized by pecuniary enrichment; by a great addition to the beauty of the external appearance of the college; by the beginning of systematic efforts in physical education; by giving new power and influence to the scientific department, and increasing the means for the moral and religious welfare of the students. A grand work Dr. Stearns accomplished, which will go on increasing in its influence through all the years of the future of the college. The good judgment, the amiable spirit, the gentlemanly manner, the refined taste and Christian earnestness of Dr. Stearns, together with great firmness of purpose and remarkable administrative abilities, made his influence powerfully felt by many students of his day, and lives on in the college now. Dr. Stearns died very suddenly in 1876.

ADMINISTRATION OF PRESIDENT SEELYE.

At the commencement following the death of Dr. Stearns, Rev. Julius Hawley Seelye, D. D., professor of mental and moral philosophy in Amherst College, was appointed president.

Professor Seelye was born in Bethel, Conn., September 14, 1824; graduated at Amherst College 1849; studied theology in Auburn Seminary,

and at Halle, Germany; was ordained, and became pastor of the First Reformed Dutch Church, Schenectady, N. Y., 1853. In 1858 he was elected to his professorship in Amherst College, where he exhibited remarkable ability as a teacher of philosophy and had commanding influence as a preacher and college officer. His deep interest in the missions to the heathen led to his appointment by the American Board of Commissioners for Foreign Missions as special lecturer to educated Hindoos on the subject of Christianity, and he made a visit to India, where he was received and listened to with much interest by educated Hindoos, and gave able lectures, which were subsequently published in India and in this country. He was also so much interested in the civil affairs of the country that he was elected to Congress in 1874 by an independent party consisting of both Republicans and Democrats, and won high distinction there by his independent position and the force of his arguments and eloquence in debate. The trustees very wisely felt that he was the man to be at the head of Amherst College; and his power was immediately felt in that position. He attracted large gifts of money for the college—securing an endowment for the presidency from Chester W. Chapin, of Springfield; for the professorship of history and political economy from Henry Winkley, of Philadelphia, and also for a new professorship, that of biology, from Mrs. Valeria G. Stone.

A generous donation for the enlargement of the library building from Henry S. Morgan, and one from Chas. M. Pratt for a more commodious gymnasium have come to the treasury during his presidency. Other gifts, too numerous to mention particularly, he has obtained for the college. President Seelye has shown original thought on the methods of education and discipline in a college. While conservative in his spirit, his mind has been open to anything new in method that promised to be for the welfare of the students. Though he has insisted upon retaining the ancient languages, and has required all the students to give considerable attention to mathematics and physics, he has thought it advisable to allow a large freedom in the selection of branches of study by the students, particularly in the later stages of the college course. Experience seems to have justified such a change in the college curriculum.

But the most important and noticeable change has been in the form of college government, by which a representative body from the students themselves are made to share in the government. This body is called the "College Senate." It consists of four from the senior class, three juniors, two sophomores, and one freshman. The presiding officer of this body is the president of the college. To this college senate all questions of college order and decorum are referred. President Seelye, in a letter to the alumni dated November, 1888, says:

The action of the faculty in referring such questions to the decision of the senate has been justified by the result. The senate have considered such questions from the first intelligently and without passion, and during the past year there has been an evident growth in the sense of responsibility and in the weight given to their

judgments by the college. The decisions of the senate have sometimes gone entirely counter to the prevailing wishes of the students, but they have been accepted, so far as I know, without dissent. The senate seems to be now able not only to voice but to direct college sentiment on matters submitted to their jurisdiction, and I can not but think that there is in this an educating force of great worth and promise. The president of the college presides at all the meetings of the senate, and no action is valid without his approval, but only in a very few instances since its organization have I been obliged to withhold my assent from the votes given, and in these both the college and the senate accepted my decisions with singular readiness. The opinion of Professor Morse, given in his article in the December (1888) number of "Education," that the college senate has become a powerful influence in preparing the Amherst students for citizenship, will not be questioned here. Since the adoption of this method of government the disciplinary affairs of the college have gone forward with much less friction than ever before.

Reference has been made to the donation of \$20,000 given by John Tappan, of Boston, for the founding of a professorship which he desired to have called the "Samuel Green professorship of biblical history and interpretation and pastoral care," whose incumbent must be pastor or associate pastor of the college church. It has been stated that by the provisions of the will of the founder, Dr. Stearns was to perform the duties, and have the avails of the professorship during his life. After the death of President Stearns it became necessary to appoint a Samuel Green professor, for by the provisions of the endowment, if for 12 consecutive months there should not be one, the money would revert to the heirs of the donor. As many as four persons were appointed, one after the other, who gave the trustees reason to think they would accept the appointment, but after further consideration of the subject each one declined the place till Rev. Thomas P. Field was appointed in 1878. He was required to preach two Sundays in each term; to aid in conducting other religious meetings, and to give instruction in Bible history and the evidences of Christianity. As no more preaching was required of him than of the other preaching professors, as the president continued to be pastor of the college church, and as there were difficulties in the way of pastoral visitation not found in ordinary parishes, the first incumbent of the professorship was a professor rather than a pastor. He gave instruction in the Hebrew language and literature, gave some lectures on Biblical history, and on examples of Christian character, taught classes in natural theology and the evidences of Christianity, devoting as many hours to such instructions as the other professors did in their departments. This did not seem to be precisely the original object of the professorship, but came as near to accomplishing the same as appeared to be practicable under the circumstances, with the continual consciousness on the part of the incumbent that something better might be attempted and done. With that feeling he resigned the professorship in 1886, and after a few months Rev. George S. Burroughs, of New Britain, Conn., was appointed. He was expected, when appointed, to do more work as a preacher and pastor and less work as a professor than had been done by his predecessor. He is now

laboring with great earnestness and fidelity in his place. With superior talent, fine scholarship, courteous manners, an amiable spirit, Christian zeal, and a heartfelt desire for the temporal and eternal welfare of the students he may hope to be increasingly successful in the difficult position which he occupies.

During the administration of President Seelye the number of students in the college has greatly increased and its prosperity and power have been uninterrupted. The students do not live in the college dormitories as much as they did, but the Greek-letter societies have purchased, and some have built houses for themselves which are convenient and some of them elegant. These societies are doing a good work for their own members and for the college, and are looked upon with good favor by the faculty, most of whom are members of one or the other of these societies. The societies dwell together in friendly rivalry, and their houses form delightful centers of meeting as they revisit the college to recount the scenes of former days. A great increase of this society spirit was manifest during the administration of President Seelye, and in various ways that administration was one of great prosperity.

This sketch ought not to be brought to a close without more special reference to some of the distinguished men who have labored so abundantly for the good of the college. We may say of the members of the faculty that from the beginning of the institution they have been distinguished not only for zeal and efficiency in their several departments but also for their decided faith in Christianity and earnest efforts for its extended influence in the college and throughout the world. Most of them have been ministers of the gospel, and they have desired, first of all, the spiritual welfare of the students, and as the result of their efforts a Christian church has been kept alive in the college, to which great numbers have been added from time to time, and many have devoted themselves in college to the work of the Christian ministry in our own land and in other lands. Some of the greatest preachers of our times were graduates of Amherst College, while more Christian missionaries have gone from Amherst into heathen lands than from any other college; and wherever they have labored they have been an honor to our country and have made their power felt for the good of the lands to which they have gone.

Of most of the members of the faculty who have attained high honor as scholars and teachers we can not speak here, but we think, in addition to those that have been named, we may refer particularly to two who have done such noble work for the college that we can not properly give the history of the college without a distinct reference to them. These two are Ebenezer Strong Snell and William S. Tyler. Mr. Snell came with President Moore from Williams, and graduated in the first class of the college in 1822. He remained in Amherst as teacher in the academy till 1825, when he was appointed tutor in the

college. In 1827 he was made instructor in mathematics and natural philosophy. From 1829 to 1834 he was adjunct professor of mathematics and natural philosophy, and in 1834 was appointed to a full professorship in the same department, where he continued till his death, in 1876. Professor Snell had a remarkable talent for teaching. He was patient with the dullness of his pupils in mathematics, where dullness is so often seen. He was never cross and irritable. He had an unceasing fund of good humor. He was clear and concise in all his statements. His manipulations in his philosophical experiments showed the hand of a master. He would invent apparatus to illustrate his principles such as had never before been seen in a lecture room. If he was not a great discoverer in physics, he was surely a great teacher of physics, and that was the work he had to do in the college. And withal it was felt by his pupils that he was a sincere, honorable, Christian gentleman, who had at heart nothing but their welfare. So, in the long period of his connection with the college, he exerted an ever growing and incalculable influence for good.

The other name is that of one who is still with us, William S. Tyler, and of whom others will speak more freely after he is gone. He graduated from the college in 1830, was appointed tutor in 1832, was made professor of the Latin and Greek languages in 1836, and of the Greek language and literature in 1847, and still remains in the college doing the work of a full professor, occasionally preaching in the church, and taking an active part in all the disciplinary methods of the college. He is identified with its history. He has been with it in almost all its changes from the beginning. He has borne with self-denial its straits and adversities, and has partaken of and rejoiced in its prosperity. He has been able to adapt himself to the changing circumstances of the times, and so has kept in living sympathy with the students, as the different classes have come and gone. While he has loved especially his own department of Greek, and by his commenting on Greek authors has gained a wide reputation as a Greek scholar, and has been a most faithful and efficient teacher of Greek, he has felt at the same time the value of all the departments of the college, and has been willing and desirous that each should have its due place in the curriculum. He has not thought that there is nothing worth seeking for but Greek roots, but has gathered and exhibited the flowers and fruits of literature in Greek and other languages, and above all has thought and labored as if he thought that all literature has value mainly as it tends to develop, strengthen, and beautify a manly Christian character. So his influence has been uplifting and animating during the many years that he has been connected with the college. Of the other living professors it would take too much space to write here, and therefore nothing more can be said than that they all are doing their duties with conscientious faithfulness and with general acceptance.

Amherst is now well endowed and well manned, but needs still greater endowments, and more men as instructors. Situated as it is in the heart of Massachusetts, in a healthful locality, in a thriving village surrounded by scenery that can hardly be surpassed for beauty in the world, it must always attract students. The faith of its founders, the history of the past, and the means it now has for furnishing a large and liberal education all concur to give us the assurance that it must advance with ever increasing influence through the future years.

PRESIDENT MERRILL EDWARDS GATES.

Owing to failing health, President Seelye resigned his office early in 1890, though he still serves the college as lecturer on the history of philosophy. Merrill Edwards Gates, PH. D., LL. D., L. H. D., then President of Rutgers College, was chosen July 30, 1890, President of Amherst, having had at about the same time a call to the presidency of Oberlin College. He entered upon his duties at Amherst in the autumn following, and on the 24th of June, 1891, was formally inaugurated, the Rev. Dr. R. S. Storrs delivering the address on the part of the trustees. President Gates's address was entitled "Education for Power," and indicated a policy in which the characteristic ideals of Amherst life were sympathetically recognized, while insisting that the essentials of a liberal education were the building of character, and the development of all a man's powers. He stated that the natural-science department would offer enlarged facilities for work, and that undergraduates were to be placed under instructors of the very highest ability from the beginning to the end of their course. A gift of \$100,000 from Mr. D. Willis James, of New York, to be known as the "Seelye Fund," was announced at the commencement banquet.

Prof. Arthur L. Kimball, PH. D., for eight years associate professor of physics at the Johns Hopkins, has been chosen professor of physics at Amherst. Prof. George D. Olds, M. A., professor of mathematics at the Rochester University, has been appointed to the new professorship of mathematics, and, besides conducting advanced elective work, will teach the mathematics of the Freshman year. A chemical laboratory and physical laboratory are soon to be added to the college buildings; the biological laboratory has just been enlarged to double its former capacity; other improvements have been made in the buildings.

During the past year, in addition to the gift of Mr. James, a bequest of \$60,000 for the endowment of a Greek professorship was received from the estate of the late John C. Newton, and one of \$100,000 from the late Daniel B. Fairweather, to be added to the general fund of the college.

A fellowship in physics has been recently established, and an additional professorship of the Romance languages is announced. The Pratt Athletic Field, costing, with its appointments, some \$20,000, is believed to be the most complete college athletic field in the country. Physical training has long been a prominent feature at Amherst. Rufus P. Lincoln, M. D., of New York, has established a fellowship which yields \$300 annually, and is awarded for unusual proficiency in this department, and the Hon. Frederick Billings, late of Woodstock, Vermont, as a memorial to his son, gave, in 1890, an endowment of \$50,000.

CHAPTER XII.

TUFTS COLLEGE.

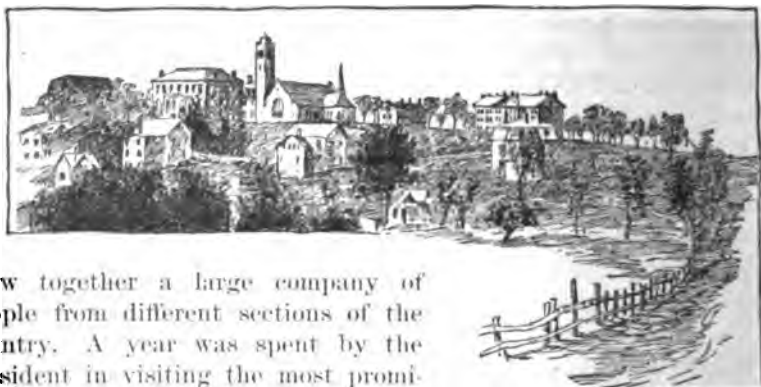
By Rev. E. H. CAPEN, D. D.

Tufts College is situated on the most beautiful and commanding eminence in the southeasterly part of Middlesex County, within the town of Medford and on the borders of Somerville. This eminence was formerly called Walnut Hill, on account, it is said, of the heavy growth of walnut timber with which it was covered at the time of the settlement of the colony, but is now called College Hill, on account of the institution which crowns it. The land on which the college is built is a part of the farm which the late Charles Tufts received by way of inheritance; and when asked by his relatives what he would do with the bleak hill over in Medford, he replied, "I will put a light on it." The tract of land originally given by Mr. Tufts consisted of 20 acres. Subsequently he gave his pledge to add other valuable tracts adjoining. This pledge has been fulfilled, so that the plot of ground belonging to the college, given by Mr. Tufts, embraces upwards of 100 acres. The late Deacon Timothy Cotting, of Medford, also gave to the college at his decease a piece of land lying near the institution containing upwards of 20 acres. In consequence of the munificence of Mr. Tufts it was determined that the college should bear his name.

The definite impulse which resulted in the establishment of Tufts College may be traced to the sermon preached by Hosea Ballou, 2d, D. D., before the general convention of Universalists, in the city of New York, September 15, 1847. In this sermon Dr. Ballou urged the "duty of general culture" and the importance that a denomination should have "at least one college placed on a permanent basis" with such clearness and emphasis that the movement at once took organic shape and went forward without pause from that hour. Dr. Ballou declared that \$100,000 was the least sum with which the work could begin and have any prospect of success. The Rev. Otis A. Skinner was appointed to obtain subscriptions to a fund to that amount. The sum was a large one in the then condition of the Universalist body; but in an undertaking of that kind Mr. Skinner knew no such word as fail. It took years for the accomplishment of his task; but in the summer of 1851 he was able to announce that the subscription was completed. A meeting of the subscribers was held in Boston on the 16th and 17th of September of that

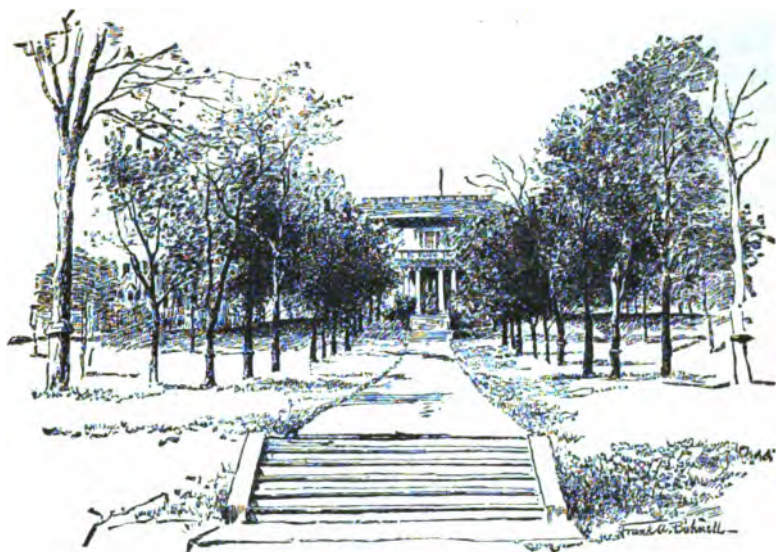
year. A board of trustees was designated, who subsequently fixed upon the present site of the institution and determined its name. Application was made to the legislature for a charter, which was granted April 21, 1852. The original charter conferred the power to grant every kind of degree usually given by colleges "except medical degrees." This restriction was removed by act of the legislature, dated February 2, 1867.

In July, 1852, the Rev. Thomas J. Sawyer, D. D., was elected president of the college; but he declined to accept the office on the terms prescribed, and in May, 1853, the Rev. Hosea Ballou, 2d, D. D., was chosen to the office, which he filled until his death, in May, 1861. In July following his election the corner stone of the main college hall was laid by Dr. Ballou. The event was one of great interest and significance, and



drew together a large company of people from different sections of the country. A year was spent by the president in visiting the most prominent institutions of learning at home and abroad, preparatory to organizing the new college and laying out its course of study. In the work of organization Dr. Ballou received important and valuable assistance from John P. Marshall, the present senior professor and dean of the college of letters. The college was first regularly opened for the admission of students in August, 1855, though a few students had been residing at the college and receiving instruction from the president and Professor Marshall during the previous year. In the beginning the success of the institution was as marked as its friends could reasonably expect; but the great anxiety attending the beginning and development of so important an undertaking seriously affected the health of Dr. Ballou, and he was cut down before the college could avail itself of the transcendent abilities which he brought to the discharge of his duties, and before he could witness the almost unexampled material prosperity awaiting it. President Eliot generously said not long since that the remarkable growth of Harvard University in these later years is largely the fruit of the efforts of James Walker, a fit contemporary and fellow-worker in the cause of education with Dr. Ballou. Truly, other men labor and we enter into their labors. In an important sense the college was the creature of Dr. Ballou's brain. He had so clear a conception of the nature and scope

of an institution of learning of the highest grade suited to this latitude and these times, and he was so successful in producing a conviction of



its possibilities in the minds of rich men, that they were ready to devote to it their all; but he died before the fruits of his labors had begun to appear.

In the spring of 1862 the Rev. A. A. Miner, D. D., was elected to succeed Dr. Ballou, and continued to hold the office until his resignation in February, 1875, a period of nearly 13 years. Dr. Miner did not take up his residence at the college nor relinquish his connection with the parish in Boston, of which he was pastor; but he visited the college daily, or as often as his presence was required. It was during his presidency and largely through his instrumentality that the extraordinary material development of the college was secured. Very soon after its establishment, Silvanus Packard, a prosperous merchant and a parishioner of Dr. Miner, who was without children, announced his intention of making Tufts College his child. He gave generously to it during his lifetime, and, dying, bequeathed to it nearly the whole of his property, amounting to nearly \$300,000. The donations and legacies of Mr. Packard exceed in amount those of any other benefactor. The one who comes the nearest to him in the aggregate of his gifts is Dr. William J. Walker. This gentleman divided his princely estate between the following institutions: Amherst College, the Museum of Natural History in Boston, Tufts College, and Williams College. The share which Tufts College received in this distribution was upwards of \$200,000. The benefactions of Dr. Walker are remarkable, if we remember that he was an alumnus of Harvard College, an Episcopalian in religion; that his trusted friend and counselor at the time he was arranging for the dis-

posal of his property was Thomas Hill, D. D., the president of Harvard University, and that Tufts College was in the earliest stages of its development; but, notwithstanding these facts, sufficient in themselves to warp the judgment of ordinary men, his vision was clear enough to enable him to see that there was room for another great college to grow up in the neighborhood of Boston, even under the shadow of that ancient and renowned university.

Another notable friend of Tufts College was Dr. Oliver Dean. In the beginning he made very liberal offers, provided the institution should be placed in Franklin. Subsequently he devoted the greater portion of his wealth to the founding of Dean Academy, one of whose functions was to be the fitting of young men for the college. He also showed still more distinctly his favor to the college by contributing in all \$90,000 to its funds.

But the college was especially fortunate in its infancy, and when it was practically without funds, in having for its treasurer Thomas A. Goddard, a wealthy merchant; a man utterly void of personal vanity, whose eyes swept over the whole field, and who, wherever he saw that the cause could be promoted by a timely benefaction, very simply and unostentatiously bestowed it. So when the college was almost entirely without funds and had but a small part of the income needed to meet its current expenses, he quietly paid the deficiency out of his own pocket and preserved it from debt.

At the conclusion of the first half of the college year 1874-75, Dr. Miner, having previously resigned his pastorate in Boston, tendered his resignation of the presidency of the college. Neither institution, however, was willing to accept his resignation, and each sought to retain his entire services. After mature deliberation he decided to accept the invitation of the parish, and his official connection with the faculty of the college, which he had held with distinguished ability and success for 13 years, was thus permanently severed.

The Hon. Israel Washburn, jr., the war governor of Maine, was chosen as his successor. But he promptly declined the office. The trustees then determined to make a new departure and place an alumnus of the college at its head. Accordingly the present incumbent, at that time pastor of the First Universalist Church of Providence, R. I., and a graduate of the class of 1860, was elected to the vacant chair in March, 1875, and was inaugurated on the 2d day of June following. Whatever may be the ultimate verdict concerning the wisdom of the trustees in the selection which was then made, no one will deny that the calling of an alumnus to the post has had the effect of quickening the interest and securing the coöperation of the graduates of the institution beyond anything that could have been done.

I come now to speak briefly of certain changes in the internal life of the college, many of which have taken place under my own eye, and with the shaping of which in important respects, during these later

years, I have had something to do. In the matter of development few institutions in this country have made greater progress. It is a long step from what the college was when I knew it as a student, to its present condition; so that those who were only acquainted with its life 15 or 20 years ago would scarcely recognize it as the same life to-day. Indeed the modifications which have been introduced into its discipline and into its courses of study have aroused an interest in its work outside of and beyond mere denominational lines, and are beginning to attract to it students from many miscellaneous sources.

One of the chief difficulties in the way of local patronage has been the overshadowing influence of Harvard University. It was scarcely to be expected that an institution planted in such close proximity to that powerful and venerable seat of learning would, in the beginning, attract students from its immediate neighborhood. Many persons have thought that the location of the college is a mistaken one on that account. But colleges are not made in one day nor in one decade. It will take more than Leland Stanford's millions of endowment to give his university a solid and enduring fame. Colleges, indeed, like all the great and permanent institutions by which society is upheld and the welfare and progress of humanity are secured, are the slow growth of generations. The selection of the present site of the college cannot be regarded as other than fortunate; first, because of its proximity to Boston, the most important literary center of the New World, where it may constantly feel the pulsations of every intellectual movement that takes place in the domain of thought; and, secondly, because, owing to its contact with the foremost college in the land, it has been compelled to adopt and maintain the highest standards in its work. The result of this is seen in the steady growth of recent years. During the last 5 or 6 years there has been a good percentage of attendance from schools in the immediate neighborhood of the college which have heretofore sent their students almost exclusively to Harvard. Men have been drawn to the college wholly without reference to denominational lines, simply because they believed the college had advantages to offer unsurpassed by any institution in the country. Within the last few years the college has made a decided gain in students. The whole number for the year 1890-91 was 160 in the college, of whom 35 were in the divinity school, and the remainder in the college of letters.

The course of study originally adopted was substantially that of the leading New England colleges. It has adhered throughout very firmly to its standard. The ten associated colleges of southern New England voted at their annual meeting in 1879 that it is desirable to adopt a system of uniform requirements for the admission of students. Tufts was one of the first to accept the scheme proposed by the conference of examiners in the different institutions. The faculty as originally constituted consisted of three professors besides the president; and for many years the entire work of the college was performed by not more than five

teachers. The gifts and benefactions of Dr. Walker, designed mainly for the promotion of mathematics and related branches of study, enabled the trustees to enlarge the facilities for instruction on the side of science. A professorship of civil engineering was created in 1867. This department has been enlarged gradually, until now men may receive complete courses of professional instruction in civil, mechanical, and electrical engineering. Some very able engineers, holding important and responsible positions, have received their training here. The subjects of natural history, physics, and chemistry have each been assigned to separate chairs. The department of physics has two excellent working laboratories. Besides the regular work in physics with the college classes, original investigations are carried on under the direction of Dr. Dolbear, the professor of physics, and Professor Hooper, the professor of electricity. In the department of chemistry, the organic research laboratory has been very carefully equipped for that line of work, and offers facilities for original investigation which will compare favorably with those of any similar laboratory in the country. During the past few years very considerable additions to chemical knowledge have been made by the able corps of instructors. Of the department of natural history we shall speak later on.

The only degree given in the beginning as a reward for residence and study in the college was that of bachelor of arts. But the presence of a large number of students who were not prepared to take that course of study in full led to the organization of two additional courses, one leading to the degree of civil engineer, and the other to the degree of bachelor of philosophy. The latter course has received many modifications, and in the autumn of 1875 it was determined to make it a 4 years' course, the same in all respects as the regular course, except that it omits Greek and substitutes instead of it the modern languages and some elective work in science. During the present year, 1891, a course has been opened in which the modern languages are substituted for Greek and for which the degree of A. B. will be given. Previous to 1875 the work of the college was mainly prescribed, with but little opportunity for optional or elective studies. At that time the scope of electives was greatly broadened. There are now eleven full courses of electives open to students. From the middle of the junior year a very large percentage of the student's work is in those lines which he chooses for himself. It was decided, also, immediately after the elective system went into effect, to confer special honors at the time of graduation upon any student who attains distinction in any particular study and in two cognate studies, under such rules as the faculty have prescribed. Another important movement in the direction of sound scholarship was made about this time. It was determined that the degree of master of arts, which, so far, had been granted to all graduates of the degree of A. B. who applied for it after 3 years from their graduation, should be conferred only upon such graduates of the regular and philosophical courses as should pursue,

during a residence of not less than 1 year, under the direction of the faculty, a prescribed course of study in at least two departments. The privilege of graduate study was also opened to those holding like degrees from other colleges. The result of this action has been to retain at the college for more protracted and profound study ambitious and scholarly men out of every class.

The modifications of discipline have been no less important either in their character or results. Formerly in all the New England colleges an elaborate system of rules, enforced by an oversight, which often amounted to espionage, was thought to be necessary to good order and the proper moral development of young men. In the eyes of the students the faculty of a college seemed to be little else than a grand court of inquisition for the trial and punishment of offenses against discipline. In point of fact, a very large percentage of the time of college officers was spent in that business. At Tufts, perhaps more completely than in any other New England college, all this is changed. Formal rules relating to conduct have been abolished. Men are put entirely upon their honor, and are no longer watched. Since 1875 there has not been a single case of a student summoned before the faculty or a committee of the faculty for discipline. Under this policy the gain in the orderly behavior, moral tone, and contentment of students has been immense. For 16 years not more than two students have been sent away from the college for misconduct; and not more than two or three, so far as I remember, have left the college because of dissatisfaction either with its methods or its faculties; while the relative percentage of those who graduate to those who enter has risen in 20 years from 63 per cent. to nearly 80 per cent., placing us, in this respect, in the front rank of New England colleges.

The whole number of graduates is now about 500. Of this number representatives may be found in the principal walks of almost every one of the learned professions. As an indication of the quality of scholarship produced, it may be remarked that 11 of the officers of instruction and government, including the president, are from its own graduates. The board of trustees consists of 29 persons. Of this number 10 are from the alumni of the college.

Silvanus Packard by will directed that the trustees should establish and maintain out of the rents and profits of his estate one theological professorship. The Rev. Thomas J. Sawyer, D. D., was elected Packard professor of theology, and the divinity school, with Dr. Sawyer at its head, was organized and opened for the admission of students in 1869. At first 1 professor was associated with Dr. Sawyer, and very soon another was added to the faculty. There are at present 4 professors and 1 instructor besides Dr. Sawyer in the divinity school. The course of study, at the opening of the school, leading to the degree of bachelor of divinity, was 3 years, but so large a number of those applying for admission were found to be deficient in elementary training that the course was lengthened to 4 years for all except college graduates.

In order to give greater encouragement to men having the Christian ministry in view to secure college training before entering the divinity school, after the present year, while a preparatory course of 1 year for all who have not the degree of A. B. will be retained, the degree of B. D. will be given exclusively to college graduates. Upwards of 60 students, since the organization of the school, have taken the prescribed course in theology and received the degree of bachelor of divinity. Of this number nearly one-half are in charge of important parishes in Massachusetts, and others in different parts of the country are occupying some of the most prominent and influential pulpits.

When the present site of the college was selected the hill was without trees and almost repulsive in its nakedness. The erection of the main college building and the first dormitory only served to heighten its wind-swept appearance. But other important buildings have been added; walks and driveways have been laid out; trees have been planted and have attained, on the southerly slope, a thick and heavy growth, and are beginning to get a hold upon the northerly side; the reservoir of the Mystic waterworks is established upon the summit of the hill, and, in effect, forms a part of the college grounds; so that in the summer season there is no more beautiful or attractive spot in the whole region about Boston than College Hill. In 1882-83 a very important feature was added to its cluster of buildings by the erection of a stone chapel from funds provided by Mary T. Goddard. The style of the edifice is Romanesque with a genuine Lombardic tower. It is as graceful a piece of architecture as can be found in this part of the country and is a worthy memorial of the woman, who, with her noble husband, has been so efficient a promoter of the origin and growth of the institution. Since the completion of the chapel Mrs. Goddard has built and finished at her own expense an excellent gymnasium.

One of the most important additions of recent years has been the founding of the Barnum Museum of Natural History. In the spring of 1883 the writer suggested to the Hon. P. T. Barnum that, as he had been all his life engaged in collecting rare objects in certain departments of natural history for the purpose alike of popular amusement and instruction, it would be most appropriate for him to leave behind him, as his monument, a natural-history museum in connection with the college of which he was one of the original promoters and founders. The response was instantaneous. He directed me at once to procure plans and specifications of a building which would admit of indefinite extension, and submit to him an estimate of the cost. In accordance with the foregoing scheme, the present museum building has been erected, and a beginning has been made also in the endowment fund. The museum, which is only the central portion of what is intended to be a much larger building, is a structure of dignity and beauty. The first, or basement floor, which is almost wholly above ground, is occupied by the steam-engine and the necessary laboratories and workrooms. The

second or main floor, has, besides a large lecture room, a grand vestibule, containing a marble bust of the donor, by Thomas Ball. Here the larger and more important specimens of natural history now belonging to the college are deposited. Here also the stuffed skin of Jumbo finds its ultimate resting place. The third floor comprises a large exhibition hall, 50 feet wide by 70 feet long, with a gallery running completely around it. In addition to the important cabinet already belonging to the college, Mr. Barnum authorized Prof. Henry A. Ward to furnish a fine zoölogical collection. This collection, comprising several hundred choice specimens, selected with special reference to purposes of instruction, has been received, mounted, and set up in cases specially designed for the purpose. By his last will Mr. Barnum left \$40,000 for the erection of two new wings to the museum.

The library has had, on the whole, a very satisfactory growth. Dr. Ballou's extraordinary love for books led him to bestow particular attention upon its formation. He was unremitting in his solicitation of gifts from friends and acquaintances and from publishers and booksellers. The interest awakened by him has never flagged. There are now in the possession of the college upwards of 30,000 bound volumes, many of them rare and of great value, and 8,000 or 9,000 pamphlets.

The college has been distinguished for its liberal policy towards those young men who are obliged on account of limited means to struggle for their education. The charge for tuition is \$100 a year. But there are more than fifty scholarships in the gift of the college. By means of these the tuition may be canceled for those who prove their worthiness by superior attainments. In addition to these, gratuities are given in case of need, so that the instruction is practically free to all men of promise and fidelity, whose circumstances require it. It is a gratifying fact that some of the most distinguished and successful of its graduates are from among those who have enjoyed its pecuniary favors, and who would have found a liberal education impossible without them. Moreover, on account of the isolation of the college, there being no villages in immediate contact with it on either side, it is not only extremely favorable for study, but admirably adapted to those who are obliged to practice economy. Probably there is no institution in America where a student can have equal advantages at so low a cost.¹

¹ Since the foregoing was written two or three bequests have been added to the endowment. Miss H. H. Fay, of Washington, D. C., made the college residuary legatee, by which between \$20,000 and \$30,000 have been received. By the will of the Rev. W. H. Ryder, D. D., of Chicago, the college shares with other institutions in the remainder of his estate. The amount realized from Dr. Ryder's bequest is upwards of \$33,000. By the will of the late Ezra M. Gay, of Milford, N. H., the college receives about \$60,000.

At the commencement of 1891 the Rev. A. A. Mercer, D. D., announced his purpose to give \$40,000 for a new theological building. A subscription was immediately begun for a dormitory to accompany the main hall. The contracts for both buildings have now been made.

E. H. C.

CHAPTER XIII.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

By Prof. SILAS W. HOLMAN.

INTRODUCTION.

The formation of an estimate of the influence of an educational institution requires a knowledge of the nature, quality, and amount of its work, past and present. This should be based rather upon demonstrated results than upon professions; that is, rather upon what those are and are doing who have come within the influence of the institution, than upon the stated intentions on the part of its board of managers. Unfortunately, information of the former kind is difficult both of access and interpretation, especially in a comparatively young institution.

To present for consideration the Massachusetts Institute of Technology in its influence upon higher education in this State and country, the plan here adopted is, to state the causes which led to its establishment, to show the lines along which it was planned and organized, to note and to follow the development of those features which were new or advanced, to estimate the quality of the general work of the institution, to state its present scope, and, finally, to consider statistically the number, distribution, and occupations of its graduates and of other former students not graduates, thus indicating roughly to what extent and in what manner the community has been directly influenced.

ORIGIN.

The Massachusetts Institute of Technology is recognized in the community and abroad almost solely as a school of industrial or applied science, that is, as a "technical school;" its other functions, although not unimportant, being less widely known. It was incorporated by the State of Massachusetts in March, 1861, and organized under the act of incorporation on April 8, 1862.

In the year 1859 appear the first records of concerted action which led up to its establishment. An appreciation had become somewhat general of the aid to the material interests of New England which would come from the greater diffusion of scientific and technical knowledge amongst artisans and managers of manufacturing interests, and from the enlargement and more thorough training of the class of tech-



MASSACHUSETTS INSTITUTE OF TECHNOLOGY—LABORATORY, ELEMENTARY PHYSICS.



MASSACHUSETTS INSTITUTE OF TECHNOLOGY—LABORATORY, BIOLOGY.

nically educated men, such as civil, mechanical, and mining engineers, chemists, architects, etc. In a more or less vague way it was recognized that this end was being served in some lines with notable success in England and on the continent of Europe, by technical schools, museums, *conservatories*, and similar organizations. But of the prominent citizens of Boston and the State at large who, in 1858 to 1860, became the earliest promoters, and later the indispensable friends and substantial supporters of this educational movement, it is safe to assert, in the words of a prominent representative of them, that "they wanted a technological institute but had a very faint idea of what such an institute should be." Nor was the Institute, when it took on form under the master mind of Prof. William B. Rogers,¹ in any sense a copy of existing institutions, either in this country, as none of similar scope and aims were in existence here or abroad, or had been definitely planned, since it was and has remained characterized by many features which were novel (some being specially adapted to the conditions of this country), and to whose permanent value their reproduction and independent development both here and abroad testify.

Extracts from records and documents will be given which will tell the story of the growth of this movement in the minds of its originators better than commentary can do. They certainly constitute an important and enduring chapter in the history of higher education in the State and country.

On February 18, 1859, a meeting of about forty "individuals representing associations of agriculture, horticulture, art, science, and various industrial, educational, and moral interests of the State," was held in the library of the Boston Society of Natural History, Mason street, Boston. This appears to have been the first step in organization of an effort for the promotion of some form of popular and more extended scientific education. The rapid and persistent development which followed, in the next two years, must be held as an indication of a general and strong appreciation by the community of the importance of increased facilities in this direction, which was intimated in the address of Governor Banks, in January, 1859. At this first meeting Mr. Marshall P. Wilder presided. Prof. Louis Agassiz, Hon. A. H. Rice, Mr. John D. Philbrick, and others spoke. A committee was appointed to memorialize the legislature and did so as follows, in March, 1859:

MEMORIAL TO THE LEGISLATURE OF MASSACHUSETTS IN RELATION TO A CONSERVATORY OF ART AND SCIENCE.

The undersigned, a committee appointed by citizens of the Commonwealth, at a meeting held February 18, 1859, in the rooms of the Boston Society of Natural History, composed of individuals representing associations of agriculture, horticulture, art, science, and various industrial, educational, and moral interests of the State, were instructed to prepare a memorial to your honorable body, in concert with a committee representing the Boston Society of Natural History, setting forth the

¹ First president of the Institute and president of the National Academy of Sciences.

wishes of the various associations represented at this meeting, as well as to confer with others not present, in a general plan of coöperation, and to second and aid in carrying out the wise and liberal suggestion of his excellency, the governor, in his address alluding to the propriety of appropriating for educational purposes the proceeds of sales of the Back-Bay lands belonging to the Commonwealth, lying near the Public Garden, in the city of Boston. The said committee respectfully represent to your honorable body, that in our opinion a most effective method of making those lands available in promoting education, as well as directly developing the wealth of the State, would be for the legislature to pass a *resolve* reserving from sale a portion of said lands, and dedicating them as a space to be used in all coming time for the erection of a building or buildings by various institutions for public benefit, which in the aggregate would constitute and might be known as the Massachusetts Conservatory of Art and Science.

The committee, without undertaking to specify in detail the extent of space to be reserved, or the specific purposes to which it should be dedicated, would simply suggest the character of a few leading institutions, which, if once established on the grounds, would form a nucleus around which would cluster kindred associations of immense value to the people of the State. Taking the commissioners' plan of the lands as a basis for illustration, we would suggest the reservation of as much as four squares for this purpose.

Section No. 1 might be devoted to collections of implements, models, and other objects pertaining to agriculture, horticulture, and pomology.

Section No. 2 to natural history, practical geology, and chemistry, with ample room for museums of specimens.

Section No. 3 to those institutions devoted to the development of mechanics, manufactures, and commerce.

Section No. 4 to fine arts, history, and ethnology.

The space reserved for each section should be ample for these and all institutions of a kindred character which the future progress of the State may develop.

In conclusion the committee, while heartily sympathizing with the efforts now in progress to form a museum of natural history and comparative zoölogy, under the auspices of Professor Agassiz, at Cambridge, for the development of abstract science, desire to coöperate with such labors in the building up of institutions of a more directly practical character which will enable the masses of the people engaged in industrial occupations more effectually to avail themselves of the advantages to be derived from the labors of those who are entirely devoted to purely scientific research.

MARSHALL P. WILDER,
GEO. W. PRATT,
SAML. H. GOOKIN,
ALFRED ORDWAY,
WM. E. BAKER,
B. F. EDMANDS,
M. D. ROSS,

Committee.

BOSTON, *March 9, 1859.*

The Boston Society of Natural History sent a memorial, dated February 25, 1859, in support of the foregoing, signed by a committee, of which Samuel Cabot was chairman and Professor William B. Rogers was a member.

The joint special committee to which the memorial was referred by the legislature expressed unreserved appreciation and indorsement of the plan in a unanimous report (House Doc. 260, March 30, 1859), but

were "united in the feeling that the present is not a propitious time for action in the premises."

A second memorial, prepared by Professor Rogers, was presented at the following session of the legislature (House Doc. 13, January, 1860). It was drawn on the same lines as the first, but with an addition of great import. In the main it was devoted to a more extended statement of intention as to the development of the departments 1, 2, 3, and 4 of the former memorial. The design thus developed is, as before, to gather and arrange large collections of objects, materials, models, natural specimens, paintings, sculpture, etc., with the view to their educational value as exhibitions open to public inspection, and to supplement this by public or private lectures and possibly in some lines by laboratories for research. An "educational museum" is also proposed—

comprising suits of specimens, models, diagrams, books, maps, mechanical and experimental apparatus, and other instruments of instruction, each the best of its kind for the specific purpose; and along with these, plans of schoolhouses, of school furniture, of warming and ventilating arrangements; and, in short, all appliances appertaining to a complete and perfectly appointed school.

The essential addition, however, to the preceding memorials indicates that which was later to become the central and almost exclusive feature of the work.

As a further and important means of popular instruction in connection with the general plan, your memorialists would look confidently for the establishment, at an early day, of *courses of public lectures*, which, while aiming at a familiar exposition of science and the arts, would exhibit in practical operation by working models or otherwise the more important discoveries and inventions as they arise. This feature, though limited at first, as in the well-known Polytechnic Institution of London, to subjects of a purely experimental or demonstrative kind, might be expected soon to extend itself to the fine arts and other branches of liberal culture, and, as a whole, could not fail to add great attractiveness, as well as public usefulness, to the general plan. Indeed, considering how greatly the educational value of museums is augmented by connecting with them an organized system of oral teachings, your memorialists are persuaded that ere long the public liberality would not only provide in this connection for popular lectures on the various branches of industrial science, on the plan of those of Morin, Payen, and other eminent professors of the Conservatoire of Paris, but would establish a COMPREHENSIVE POLYTECHNIC COLLEGE, which, like the "Central School of Arts and Manufactures," of the same city, or the great "Trades Institute of Berlin," would put in practice a *complete system of industrial education* supplementary to the general training of other institutions, and fitted to equip its students with every scientific and technical principle applicable to the leading industrial pursuits of the age.

This memorial also was acted upon unfavorably by the legislature.

¹ Believing that the failure of their previous appeal to the legislature was, in part at least, due to the incompleteness and vagueness in which they had presented this department [of practical instruction in the arts and applied sciences] of their general plan; and finding that, in spite of their ill success, an earnest and increasing interest

¹ The following paragraphs are quoted from a pamphlet prepared by Professor Rogers and entitled "An Account of the Proceedings Preliminary to the Organization of the Massachusetts Institute of Technology," etc., Boston, 1861.

was very generally felt for the establishment of an institution devoted to industrial science and education, the committee determined on taking such steps as were practicable towards the organization, in a preliminary form, of an institution of this character.

Accordingly, at a meeting held May 28, 1860, the committee assigned to a subcommittee, consisting of W. B. Rogers, E. B. Bigelow, J. M. Beebe, M. D. Ross, and C. H. Dalton, the duty of preparing and reporting the plan of an institution designed for the advancement of the industrial arts and sciences and practical education in the Commonwealth.

In fulfillment of this purpose, a scheme of organization was framed by the chairman, and embodied in a report, presenting, in some detail and comprehensiveness, the "objects and plan of an institute of technology, including a society of arts, a museum of arts, and a school of industrial science."

This report, drawn up by Professor Rogers, and accepted by the general committee, was read by him as chairman of that committee, at a public meeting of gentlemen interested in the subject, held by appointment at the rooms of the Board of Trade, on the 5th of October, 1860, and, on vote, was approved, and its publication recommended.

Thus sanctioned, the report in the form of a pamphlet (referred to hereafter as the "Objects and Plan," was distributed to persons through the city and State who were thought most likely to be interested in the subjects to which it related; and, in order to elicit the opinions and invite the coöperation of those best qualified to judge of the practical merits of the plan, the pamphlet was accompanied by the following circular:

BOSTON, *November, 1860.*

DEAR SIR: In sending you the accompanying pamphlet, setting forth the objects and plan of an Institute of Technology proposed to be established, if practicable, on the Back-Bay lands in Boston, we beg to request that you will give it your early and thoughtful attention.

In our view of the great advantages which the industrial interest and practical education of the Commonwealth would derive from such an institution, we cannot but hope our plan will so approve itself to your judgment as to win your sympathy and active coöperation.

It is proposed, at an early day, to hold a meeting in this city for the purpose of adopting measures preliminary to the organization of the Institute. Of this you will be duly notified; and we trust that your interest in the subject will secure us the benefit of your presence on the occasion. Meanwhile, it will give us great pleasure to be allowed to number you among the prospective members of the Institute, and to have the influence and authority of your name, as well as the advantage of your counsel, in connection with the undertaking.

Should it be your wish to unite with us, please indicate the class of subjects, as mentioned under the heads of "committees of arts," in which you would feel most directly interested, addressing your reply to the undersigned.

WILLIAM B. ROGERS,
Chairman of Committee.

The numerous responses to this circular, approving the objects and plan of the proposed institute, and offering coöperation in its several departments as laid down in the report, satisfied the committee that its leading features were practically suited to the great industrial and edu-

cational objects in view, and that the general scheme was likely to command the hearty and helpful approval of the community at large.

After an interval of about two months' from the distribution of the pamphlet, the committee proceeded to call a meeting for the purpose of effecting a preliminary organization of the Institute, confining the invitation to those to whom the report had previously been sent, and who were supposed to have made themselves acquainted with the different features and bearings of the plan thus distinctly submitted to them. It will be seen that the following circular, calling this meeting, was framed with the view of testing still further the deliberate approbation and interest which might be felt in regard to the proposed institution:

BOSTON, *January 7, 1861.*

DEAR SIR: You have been made acquainted, through the pamphlet and circular which have been addressed to you, with the general "objects and plan" of the Institute of Technology proposed to be established, if practicable, on the Back-Bay lands in this city.

It is now proposed to hold a meeting in Mercantile Hall, 16 Summer street, on Friday evening, 11th instant, at half past seven o'clock, for the purpose of adopting measures preliminary to the organization of the Institute, and in furtherance of a petition to the legislature for a charter, and a portion of the Back-Bay lands.

As it is of the highest importance that the industrial and educational interests of the Commonwealth be amply represented at the meeting, we earnestly beg that you will favor us with your presence and counsel on that occasion. Should you be unable, however, to attend, but be desirous of coöperating as a member of the Institute in the great public objects we have in view, please affix your signature to the accompanying statement, and return the same, prior to the day of meeting, to the undersigned.

WILLIAM B. ROGERS,
Chairman of Committee.

1 TEMPLE PLACE.

The undersigned approves of the objects and general plan of the proposed Institute of Technology, and desires to have his name placed on its list of prospective members.

Previous to the day of meeting replies were received from a large number of those to whom the pamphlet and circular had been addressed, requesting that they might be enrolled among the prospective members of the Institute, and otherwise indicating their hearty interest in the objects and action of the committee.

The meeting was held at the appointed time; and after an exposition, by the chairman, of the previous action and future purposes of the committee, and interesting addresses by Professor Pierce, Rev. Dr. Gannett and others, favorable to the Institute, a preliminary organization was established by adopting the following form of association, to which the names of those present were affixed:

We, the subscribers, feeling a deep interest in promoting the industrial arts and sciences, as well as practical education, heartily approve the objects and plan of an institute of technology, embracing a society of arts, a museum of arts, and a school of industrial science, as set forth in the report of the committee; and we hereby organize and establish in the city of Boston such an institution, under the title of the "Massachusetts Institute of Technology," whenever we may be legally empowered and properly prepared to carry these objects into effect.

The following resolutions were then adopted:

Resolved, That a committee of twenty, with power to increase their number, be appointed to represent the interests and objects of the association, and to act generally in its behalf, until it shall be legally incorporated and regularly organized under the title and according to the purpose of the Massachusetts Institute of Technology.

Resolved, That said committee be instructed to use its best efforts, in coöperation with the committee of associated institutions of science and arts, to obtain from the legislature an act of incorporation for the institute, and to secure a grant of land on the Back Bay for its use, and for that of other institutions devoted to the practical sciences.

Resolved, further, That this committee be requested to frame a constitution and by-laws for the government of said Institute in its several departments, and to submit the same to the consideration of this association, whensoever we may be in readiness and properly empowered to organize formally as the Institute of Technology.

Subsequently, on motion, the chairman of the meeting was added to the committee, to act as its chairman.

The members of this committee were as follows:

William B. Rogers, chairman.	F. S. Storer.	Charles L. Flint.
James M. Beebe.	John D. Runkle.	Thomas Rice.
E. S. Tobey.	Charles H. Dalton.	John Chase.
Samuel H. Gookin.	E. C. Cabot.	J. P. Robinson.
E. B. Bigelow.	James B. Francis.	F. W. Lincoln, jr.
M. D. Ross.	John C. Hoadley.	Thomas Aspinwall.
John D. Philbrick.	Marshall P. Wilder.	J. S. Dupee.

Thus the Institute of Technology did not include in its scope the plan of the original proposed collocated institutions, but was the outcome and realization of so much of that plan as related to direct technical and scientific education, a feature of the plan which first found expression in the memorial already quoted in which Professor Rogers' name first appears, and which took definite shape in the pamphlet entitled "Objects and Plan" written by him and above referred to.

The proposed grouping of institutions did not develop further than that one square of State land was subsequently granted to the Boston Society of Natural History and the Institute of Technology, jointly.

A third memorial was, in accordance with the foregoing, presented to the legislature in 1861, drafted by Professor Rogers as chairman of committee, and reading as follows:

MEMORIAL OF THE COMMITTEE OF ASSOCIATED INSTITUTIONS OF SCIENCE AND ARTS.

The undersigned, a committee representing various institutions devoted to science and the arts, have been instructed to memorialize your honorable body to the effect as follows:

First. That you will be pleased to grant to the Association of Industrial Art and Science, recently formed, a charter and corporate existence, under the title of the "Massachusetts Institute of Technology," empowering it to carry into effect the plan and purposes of a society of arts, a museum of arts, and a school of industrial science, as set forth in the report prepared by your memorialists and herewith submitted.

Second. That you will set apart and assign a portion of the Back-Bay lands, in a continuous space, for the use and accommodation of the Boston Society of Natural

History, and Massachusetts Horticultural Society, and the above-named Institute of Technology, under such conditions as in your judgment may best promote the practical objects of these institutions and conduce to the educational and industrial interests of the Commonwealth.

For the details of the organization and purposes of these several societies, and of their claims upon your favorable consideration as connected with the science, industry, and education of the State, your memorialists beg to call your attention to the printed pamphlets and other documents herewith submitted to your inspection.

In regard to the previous action of the legislature on this subject, your memorialists would beg to state that two years ago they submitted to your honorable body a petition of like general import with the present, which was reported on favorably by the committee to whom it was referred; that they renewed their application, in a more specific shape, to the last general court; and that the bill reported to the lower house, and rejected by the Senate at the close of the session, was, on motion to reconsider, laid upon the table.

Your memorialists deem it important to add that during the past year, while endeavoring to make their plans widely known throughout the Commonwealth, and while maturing an organization for the proposed Institute of Technology, they have received from various quarters the amplest evidence of public approbation and sympathy, not only towards the last-named feature of the plan, but in regard to the objects and claims of the Boston Society of Natural History, and the Massachusetts Horticultural Society, in connection with the general purpose of a collocation of these and kindred institutions in a continuous space upon the Back-Bay lands.

Your memorialists, therefore, feel no hesitation in renewing their application to your honorable body, in a modified and more perfect form, trusting the issue to your wise judgment of the merits of their plan, and to the ever recognized claims of education, industry, and science upon the fostering favor of the State.

WM. B. ROGERS, *Chairman*. F. S. STORER.

C. L. FLINT.

J. M. BEEBE.

J. D. RUNKLE.

THOS. RICE.

E. S. TOBEY.

C. H. DALTON.

JOHN CHASE.

S. H. GOOKIN.

E. C. CABOT.

J. P. ROBINSON.

E. B. BIGELOW.

J. B. FRANCIS.

F. W. LINCOLN, jr.

M. D. ROSS.

J. C. HOADLEY.

THOS. ASPINWALL.

J. D. PHILBRICK.

M. P. WILDER.

J. S. DUPEE.

Petitions in aid of this memorial were submitted by the Boston Society of Natural History, the Boston Board of Trade, the American Academy of Arts and Sciences, the Massachusetts Charitable Mechanics' Association, the New England Society for the Promotion of Manufactures and Mechanic Arts, and the State Teachers' Association.

The wise policy had been thus adopted of binding together into a temporary organization men of affairs, culture, and influence, distributed over all parts of the State, and of adopting a perfectly definite and wonderfully complete plan of the detail of the specific object to be accomplished. With this preparation the third appeal was made to the legislature and resulted in the incorporation of the Institute of Technology in March, 1861.

The first section of the act of incorporation of the Institute is quoted as indicating the recognized design of its founders, and its intended bearing as an educational institution. The names of the incorporators will be recognized as those of men eminent in professional and mercantile careers.

AN ACT to incorporate the Massachusetts Institute of Technology, and to grant aid to said institute and to the Boston Society of Natural History.

Be it enacted, etc., as follows:

SECTION 1. William B. Rogers, James M. Beebe, E. S. Tobey, S. H. Gookin, E. B. Bigelow, M. D. Ross, J. D. Philbrick, F. H. Storer, J. D. Runkle, C. H. Dalton, J. B. Francis, J. C. Hoadley, M. P. Wilder, C. L. Flint, Thomas Rice, John Chase, J. P. Robinson, F. W. Lincoln, jr., Thomas Aspinwall, J. A. Dupee, E. C. Cabot, their associates and successors, are hereby made a body corporate by the name of the Massachusetts Institute of Technology, for the purpose of instituting and maintaining a society of arts, a museum of arts, and a school of industrial science, and aiding generally, by suitable means, the advancement, development, and practical application of science in connection with arts, agriculture, manufactures, and commerce, with all the powers and privileges and subject to all the duties, restrictions, and liabilities set forth in the sixty-eighth chapter of the general statutes.

OBJECTS AND PLAN.

Of the proposed lines of establishment and development of the institute no clearer presentation can be made than that by Professor Rogers in an address on the "Objects and Plan of an Institute of Technology Proposed to be Established in Boston," printed and issued in 1860 before the third memorial by the Committee of Associated Institutions of Sciences and Arts. The following are extracts:

In submitting to our fellow-citizens the following outline of an institute of technology, to be established, if practicable, on the Back-Bay lands in Boston, the undersigned are desirous of enlisting the sympathy and securing the aid and counsel of the friends of industrial art and general education throughout the Commonwealth.

We believe that the great practical value of the results at which we aim, although freely admitted by the friends of genuine progress everywhere, must be recognized with especial heartiness in a community like our own, where material prosperity and intellectual advancement are felt to be inseparably associated; and we feel assured that the magnitude of the plans by which it is proposed to secure these great public benefits, instead of forming an obstacle to their attainment, will but invite our fellow-citizens to a liberality proportioned to the interests to be subserved.

In the recent progress of the industrial arts, including commerce and agriculture as well as the manufacturing and, more strictly, mechanical pursuits, we meet with daily increasing proofs of the happy influence of scientific culture on the industry and the civilization of nations. The arts, no longer confining themselves to a mere empirical routine, seek to refer their processes to scientific laws, and, in many departments, justly claim the dignity of applied science. The practical nature of the discoveries in chemistry, mechanics, geology, and other branches of scientific inquiry has multiplied almost indefinitely the lines of connection between them and the processes of the workshop, the manufactory, and the farm, and of the constructive and locomotive arts; and these countless connecting threads woven into one indissoluble texture form that ever-enlarging web which is the blended product of the world's scientific and industrial activity.

In view of this recognized connection between industrial progress and an enlarged acquaintance with the objects and phenomena of nature and with physical laws, we find that the most enlightened communities of Europe have endeavored to provide for the practical coöperation of education and the arts by the establishment of museums, societies, and colleges of technology. Of the great benefits which these organizations have conferred and continue to bestow upon the various practical arts and upon popular education we are assured by the records of their progress, and yet more by the lively desire so generally manifest to augment their number and

extend their means of usefulness. The history of the Conservatoire des Arts and the École Centrale of Paris, and the Kensington Museum, the School of Mines, the Museums of Economic Geology and Botany, and other like but less conspicuous institutions on the continent and in Great Britain, has been such, both as regards the progress of arts and the diffusion of practical knowledge, as may well incite the friends of enlightened industry in this country to systematic efforts in the same direction.

In New England, and especially in our own Commonwealth, the time has arrived when, as we believe, the interests of commerce and the arts, as well as of general education, call for the most earnest coöperation of intelligent culture with industrial pursuits. Our success hitherto in the competitions of trade, manufactures, and the other productive arts has been the admitted result of the superior intelligence which has inspired our enterprise and guided our activity; but, to secure a steady prosperity in the midst of the busy inventions and rapidly expanding knowledge which mark these pursuits in the leading European nations, we feel that it has become indispensable for us to provide, at least as effectively as they have done, such facilities for practical knowledge and for the intelligent guidance of enterprise and labor, as may make our progress commensurate, step by step, with the advances of scientific and practical discovery.

With the view of securing the great industrial and educational benefits above alluded to, it is proposed to establish on a comprehensive plan an institution devoted to the practical arts and sciences to be called the Massachusetts Institute of Technology, having the triple organization of a society of arts, a museum or conservatory of arts, and a school of industrial science and art.

Under the first of these characters, that of a society of arts, the Institute of Technology would form itself into a department of investigation and publication, intended to promote research in connection with industrial science by the exhibition at the meetings of the society of new mechanical inventions, products, and processes; by written and oral communications and discussions, as well as by more elaborate treatises on special subjects of inquiry; and by the preparation and publication, statedly, of reports exhibiting the condition of the various departments of industry, the progress of practical discovery in each, and the bearings of the scientific and other questions which are found to be associated with their advancement.

The classification of members of the Institute under various committees and the assignment of interests to the charge of the corresponding committee was designed as a means of distributing the burden of maintaining all these interests, apart from the usual executive officers.

II. Museum of Industrial Art and Science, or Conservatory of Arts.—In organizing and conducting the museum of the Institute reference should be had rather to the extent of practical instruction to be derived from it than to the multitude of objects which it might embrace. Its several departments, therefore, should aim, in the first place, at forming a collection of objects of prominent importance, as illustrating the respective arts, however common and familiar they might be; and at so arranging them as to exhibit their history as natural products or devices of art, their distinctive characters, and the successive changes wrought upon them by the application of science or mechanical skill. As specimens of materials, workmanship, and machinery accumulated, care should be taken to preserve this method of arrangement whenever practicable, and to accord a prominent place to what might be called the *typical objects* in each department, however large the general mass of its collection.

Nor in regard to any part of the museum should the great purpose of *instruction* be lost sight of in the multitudinous gathering of materials. A mere miscellaneous collection of objects, however vast, has little power to instruct, or even to incite to inquiry. The practical teaching and the real suggestiveness of a museum is almost

wholly dependent on the clear and rational arrangement of its parts and the leading ideas which rule in their classification. We would, therefore, aim at having the departments of our museum well distinguished from each other and the objects in each placed in their true connections, so as to display readily their nature or construction and to facilitate their comparison with others of the same class.

III. *School of Industrial Science and Art.*—In sketching thus far the plans and purposes of the proposed Institute of Technology, we have confined our view to the organization of a society of arts and an industrial museum, offering, at the same time, illustrations of the practical benefits to be anticipated from each. But our outline is not yet complete; these institutions, however beneficent in their respective spheres, as instruments for diffusing practical knowledge and affording incentives and suggestions tending to the improvement of the industrial arts, could, of themselves, only in part fulfill the educational purposes which it should be the aim of the Institute to secure.

The productive talent of the community, as measured by its proficiency in the practical arts, requires for its steady and rapid development other helps than can be afforded by the treasures of a museum or the discussions and publications of a society. While it would doubtless profit largely by the opportunities for instruction which collections and publications can afford, it demands yet more urgently that *systematic training in the applied sciences* which can alone give to the industrial classes a sure mastery over the materials and processes with which they are concerned.

Such a training, forming what may be called the intellectual element of production, has, we believe, become indispensable to fit us for successful competition with other nations in the race of industrial activity, in which we are so deeply interested. In the communities abroad, where manufactures and the mechanic arts have attained the greatest proficiency and are now making the most rapid advances, such an education in practical science is recognized as the chief instrument in their extension and improvement; and the schools of practical science and the polytechnic institutes, designed to form an industrial class thus thoroughly trained in the principles of their respective arts, are highly honored as well as liberally and even munificently endowed.

Fortunately, in this community, the education of the public schools is so general, and of so high a grade, that a good proportion of those who are destined for industrial pursuits are already well prepared to profit by the teachings and exercises of a school of scientific technology. Indeed, considering our acknowledged superiority in this respect as compared with other nations generally, and having in view the eminently practical nature of the intellectual training incident to our social and political organization as a people, it can hardly be questioned that we are in a most favorable condition for attaining excellence in the pursuit of the practical sciences, and for reaping the highest advantages from their application in the wide fields of commerce, agriculture, and the mechanic and manufacturing arts.

It would seem, therefore, eminently expedient in the organization of the Institute, to make provision for a department to be called a *School of Industrial Science and Art*, in which regular courses of instruction should be given, by lectures and other teachings, in the various branches of the applied sciences and the arts; and where persons destined for any of the industrial pursuits might, at small expense, secure such training and instruction as would enable them to bring to their profession the increased efficiency due to enlarged views and a sure knowledge of fundamental principles, together with adequate practice, in observation and experiment, and in the delineation of objects, processes, and machinery.

Without attempting, at present, to frame a very definite organization for this branch of the Institute, but looking rather to its practical recognition in the beginning as an integral part of our plan, however imperfectly carried out, we would mention certain departments of instruction which we think could be advantageously

established, even in the commencement of our enterprise. Among these, the first would be a—

School of design.

School of mathematics.

School of physics (which would include mechanics).

School of chemistry.

School of geology (which would include mining).

Such is an imperfect sketch [omitted from this extract] of the departments of instruction which we would consider most essential in the strictly educational branch of the Institute. In conducting them, it would be the object to provide substantial and continuous courses of teaching, such as, while imparting knowledge of the principles, facts, and processes connected with the arts, should cultivate the habits of exact thought, which are so conducive to the progress of invention and the development of intelligent industry.

In some of these departments, as drawing, operative chemistry, and mathematics, the instructions would of necessity be chiefly conducted by class studies and recitations, and laboratory exercises, requiring little or no aid from formal lectures, while in others, such as physics, general chemistry, and geology, the plan of lecture-room teaching could be advantageously and habitually employed.

In arranging the plan and courses of instruction, provisions would be made for the two classes of persons for whose benefit they are designed—those who enter the school with the view of a progressive, systematic training in applied science, and who have the preliminary knowledge, as well as time for a continuous prosecution of its studies, and the far more numerous class, who may be expected to resort to its lecture room for such useful knowledge of scientific principles as they can acquire without methodical study, and in hours not occupied by active labor.

The former would of necessity be subjected to classification and direction in their studies, as well as examinations and other tests of acquirement in the progress and at the close of their terms. The latter, without having access to the exercises of the class rooms, would be admitted to the courses of lectures on general and applied science, subject only to the conditions and restraints that are usual in public lectures generally. To neither class would we propose to offer gratuitous instruction, but we hope that through the prospering resources of the institute the entire systematic training of the school might be placed within reach of aspiring students of humble means, and that the lecture-room instructions might be made accessible to all at only an inconsiderable expense.

In regard to the latter feature of the school we may remark that as the system of merely popular lecturing in its usual form would be inconsistent with the grave practical purposes which we have in view, it could not be recognized in connection with our plan. We would, however, anticipate much valuable aid from courses of lectures on subjects not directly provided for in the school, but of a nature to be conducive to the general objects of the Institute. Such would be the history of commerce, manufactures, and the mechanic arts; biographies of eminent inventors, and other benefactors of industry; important questions in political economy and trade; the principles of architecture, painting, sculpture, and of fine art criticism; and illustrations of special inventions and discoveries in general and industrial science; and for these additions to the educational advantages of the Institute we might confidently rely upon the assistance of the members and other friends qualified to advance its purposes in connection with industrial and general education.

In the features of the plan here sketched, it will be apparent that the education which we seek to provide, although eminently practical in its aims, has no affinity with that instruction in mere *empirical routine* which has sometimes been vaunted as the proper education for the industrial classes. We believe, on the contrary, that the most truly practical education, even in an industrial point of view, is one

founded on a thorough knowledge of scientific laws and principles, and which unites with habits of close observation and exact reasoning a large general cultivation. We believe that the highest grade of scientific culture would not be too high as a preparation for the labors of the mechanic and manufacturer, and we read in the history of social progress ample proofs that the abstract studies and researches of the philosopher are often the most beneficent sources of practical discovery and improvement.

But such complete and comprehensive training can, in the nature of things, be accessible to only comparatively few, while the limited and special education which our plan proposes would, we hope, fall within the reach of a large number whom the scantiness of time, means, and opportunity would exclude from the great seats of classical and scientific education in the Commonwealth.

It will thus be seen, from the peculiar character and objects of this department of the Institute, that it could not interfere with the interests of established schools of learning devoted to general literary and scientific education. Aiming to supply the industrial classes with a knowledge and training of which they are specially in need, and which it would be incompatible with the purpose and organization of the universities and colleges to attempt to provide, it would, we feel assured, command the good wishes and active sympathies of the scholars and men of science who dispense the high instruction of these schools. Nor can we doubt that it would be gladly welcomed by all those who are practically occupied in the arts as a new source of success and enjoyment in their labors; while, by the large-minded manufacturers, merchants, mechanics, and agriculturists, who control the material fortunes of the Commonwealth, it would be heartily and liberally recognized as a needed and truly momentous addition to our means of industrial as well as of educational prosperity.

ORGANIZATION.

After the acceptance of its charter the Institute was first organized for its intended work by the formation of the *Society of Arts*, which held its first meeting on April 8, 1862. Meetings still continue to be regularly held semi-monthly, and are generally open to the public as well as to members. At these are presented inventions and discoveries in the arts and applied sciences, papers relating to matters in the engineering and other technical or scientific professions, addresses on sanitary, economic, and statistical topics.

The natural and large development of engineering and other technical associations, limited in scope to their respective subjects, has rendered the function of this Society the presentation of matters to the public rather than to a purely technical audience, but yet distinctly not the provision of public popular lectures in the ordinary sense. Many important inventions, as, for instance, Bell's earliest form of the telephone, have received their first public exhibition at the meetings of the Society.

The proceedings of the Society are annually published in a pamphlet of about 200 pages. The topics of the papers of 1887-88 were—

Arms and Armor of Ancient Japan.

An Electrical Apparatus for the Measurement of Water.

The Cosmosphere in Teaching Phenomenal Astronomy.

Hydraulic Cement, Natural and Artificial; their Comparative Values.

The Strong Locomotive.

Recent Improvements in Systems of Electrical Distribution.

A Biological Examination of the Water Supply of Newton, Mass.

A New Method for the Biological Examination of Air.

Steam Engine Experiments in the Mechanical Engineering Laboratory of the
Massachusetts Institute of Technology.

A General Review of Steam-Engine Tests.

The Manufacture of Paper, and Its Uses.

Natural Gas.

Standards of Length, and their Practical Application.

Chemical Examination of Drinking Water.

Johnson Heat-Regulating System.

The Causes of the Recent Floods in Germany.

The Development of Bridge Building.

Precious Stones in the Last Decade.

A Study of Alternating Current Generators and Receivers.

The interval between 1861 and 1864 was devoted to earnest efforts to advance the financial condition of the Institute, a difficult task under "the peculiar circumstances of the times" and one which had the warm support of Governor John A. Andrew.

On May 30, 1864, a pamphlet on the "Scope and Plan of the School of Industrial Science of the Massachusetts Institute of Technology," prepared by Professor (then President) Rogers, was adopted by the Government of the Institute. It was issued later with this circular:

ROOMS OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
No. 1 MERCANTILE BUILDING, 16 SUMMER STREET,
Boston, January 24, 1865.

DEAR SIR: I beg leave to invite your attention to the objects and plan of the School of Industrial Science of the Massachusetts Institute of Technology, as set forth in the accompanying pamphlet, and to ask your assistance in the proposed early initiation of some of its courses of instruction.

The building intended for the use of the school of industrial science, now in process of erection, will, it is expected, be in readiness for occupation next winter, when the various departments of the school will be permanently organized and put in operation.

In the mean time, to facilitate the progress of students who may wish to qualify themselves more completely for entering on the regular courses of study and practice, and to save the time of others more proficient in elementary studies who may desire to enter, in advance, the second year's course, it is proposed to open some of the classes in February, in the rooms of the Institute, on Summer street.

It will be seen, by reference to the pamphlet just mentioned, that the studies and exercises of the school are so organized as to provide a complete course of instruction and training, suited to the various practical professions of the mechanician, the civil engineer, the builder and architect, the mining engineer, and the practical chemist; and, at the same time, to meet the more limited aims of such as desire to secure a scientific preparation for special industrial pursuits—such as the direction of mills, machine shops, railroads, mines, chemical works, glass, pottery, and paper manufactures, and of dyeing, print, and gas works, and for the practice of navigation and surveying, of telegraphy, photography, and electrotyping, and the various other arts having their foundation in the exact sciences.

The courses of instruction, while thus providing for the scientific study of the constructive and manufacturing arts, offer a variety of general as well as special studies, which may be advantageously followed by students preparing for commercial occupations; and they present to such as are desirous of becoming teachers of science in our schools and other institutions the opportunity of equipping themselves for this profession, by practice in manipulations, as well as by an ample course of scientific studies.

The classes proposed to be opened at this time embrace most of the subjects designated in the pamphlet, as appertaining to the first year's course, and are as follows:

Elementary mathematics, with practice in the use of the chain, level, etc.

Elementary physics.

Elementary chemistry, with manipulations.

Drawing.

The French language.

The preliminary course will cover a period of four months, commencing, it is expected, about the middle of February. The precise date of its commencement, as well as the programme of instruction in the several classes, will be made known as soon as their organization has been determined on.

Information as to the cost and conditions of entrance, and other particulars of the course, can be obtained by applying at the rooms of the Institute, No. 16 Summer street, between the hours of 11 and 2, or by addressing the undersigned at the same place. It is desirable that persons wishing to enter the school at this time should make known their intentions as early as possible. Hoping that your appreciation of our "objects and plans" may lead you to encourage your young friends to avail themselves of this preliminary organization, I remain,

Yours, very respectfully,

WILLIAM B. ROGERS.

President Massachusetts Institute of Technology.

By order of the committee on instruction of the Institute.

Only by the reproduction in full of this "Scope and Plan" could be shown how clearly the true work to be accomplished by such a school had been apprehended in advance by President Rogers and his associates, how the plan had been developed into sufficiently complete detail, and how wise, in the light of later experience, were the views as to what should be the central aim. Brief extracts must, however, suffice. In connection with the subsequent development of the work it will be seen that while its dual object has been preserved, the training of systematic students has, as was clearly anticipated by the president, necessarily dwarfed by contrast the opportunities afforded to the general public.

The "Scope and Plan" opens as follows:

It is the design of this school to afford to the public at large opportunities for instruction in the leading principles of science, as applied to the arts; and, at the same time, to provide for systematic students of the applied sciences the means of a continuous and thorough training in the studies and practice appertaining to these subjects.

In pursuing this object, it is intended to give to the teachings such scope and method, that while imparting a due measure of knowledge, and cultivating the habits of observation and exact thought, so conducive to the progress of invention, and the development of an enlightened industry, they may help to extend more widely the elevating influences of a generous scientific culture.

PLAN OF INSTRUCTION.

In arranging the plan of instruction for the school of industrial science and art, provision is made for two classes of persons, those who may be expected to resort to the lecture rooms and school of design for such useful knowledge as they can acquire without methodical study and in hours not occupied by business; and those who enter the institution with the view of a progressive systematic training in one or more branches of applied science, and who have the preliminary knowledge as well as the time for the prosecution of its studies.

In the former of these divisions—that of general and more popular instruction—the teaching will be conducted by means of lectures alone, except in the drawing school, and in mathematical subjects requiring more familiar modes of exposition. As it is the purpose in these courses to open the halls of the Institute as widely as possible to those who desire to profit by such teachings, students will be admitted to the courses on general and applied science, and on drawing, without a preliminary examination, and subject only to such conditions and restraints as are usual in public lectures, or as may be found best fitted to make them useful and interesting.

In the second division of the school—that of systematic and professional instruction—the student while attending lectures on the various branches, will have the benefit of laboratory exercises in manipulation and analysis; of continued practice in the kinds of drawing appropriate to his studies; and of such prolonged and thorough training in the class room, and by examinations, and other exercises, as will give him a ready command over the problems with which, as a mechanician, engineer, builder, practical chemist, or scientific miner, he may be called upon to deal.

To be admitted to this division of the school, students must have attained a certain degree of preparation, hereafter to be prescribed; and after having entered, they will be subject to classification and direction in their studies, as well as to examinations and other tests of acquirement, in the progress and at the close of their terms.

FIRST DEPARTMENT—GENERAL OR POPULAR COURSE.

This department of the school is designed to embrace lectures in elementary mathematics, in physics and mechanics, in chemistry, in geology and mining, and in botany and zoölogy; especial regard being had in each case to the facts and scientific principles which are of leading importance in connection with the useful arts.

The courses of instruction will be given chiefly in the evening and will be open to both sexes. From the variety of practical subjects embraced in them, and the convenience of the hour, it is expected that they will be largely attended by persons engaged in mechanical, manufacturing, and mercantile pursuits, by teachers and students in the normal and other schools, as well as by others whose taste and leisure lead them to avail themselves of such instruction.

A detailed list of topics of lectures is given.

SECOND DEPARTMENT—SPECIAL AND PROFESSIONAL INSTRUCTION.

This department of the school is intended—

First. For such students as, by a full course of scientific studies and practical exercises, seek to qualify themselves for the professions of the mechanical engineer, the civil engineer, the builder and architect, the practical chemist, and the engineer of mines.

Second. For those who aim simply to secure a training in some one or more of the branches of applied science—such as descriptive geometry applied to construction, perspective, etc.; chemical analysis; machinery and motive powers; general physics and chemistry, with manipulations; geology and mining; navigation and nautical astronomy; metallurgy of iron, copper, etc.

The entire series of instructions, arranged in reference to the above named professional divisions, offers to the student five courses having more or less in common, viz:

1. A course on mechanical construction and engineering.
2. A course on civil and topographical engineering.
3. A course on building and architecture.
4. A course on practical and technical chemistry.
5. A course on practical geology and mining.

The studies of each of these divisions are arranged so as to extend over a period of four years, including the first or introductory course; but, as students are permitted to enter any of the advanced classes for which they are prepared, they will, in many cases, be able to complete the prescribed course in three or even less than three years.

The "Scope and Plan" continues with a scheme of what should constitute the several courses in each year, with statements regarding conditions of admission, diplomas and certificates, methods and apparatus, instruction and examination.

Of these the more important to note, as making definite progress in ideas and methods, are the "practice in physical and chemical manipulation," and "laboratories and laboratory training."

Under the former caption occurs this statement:

It will be the object of these exercises to make the student practically familiar with the adjustments and use of the apparatus and agents employed in the more important experiments and processes in natural philosophy and chemistry. With this view, the students, under the direction of their teacher, will be called, by small classes at a time, to execute with their own hands various experiments in mechanics, pneumatics, sound, optics, electricity, and other branches of experimental physics, and to exhibit chemical reactions, to fit up chemical apparatus, to prepare gases and other products, and demonstrate their properties by suitable experiments, accompanying these manipulations, when required, with an explanation of the apparatus used or of the process or experiment performed. These exercises will be held either in the lecture rooms or in the appropriate laboratories hereafter to be described, as at the time may be found most expedient.

Under the second heading follows:

The laboratory arrangements of the school are designed, when complete, to embrace the following departments:

1. A laboratory of physics and mechanics.
2. A laboratory of general chemical analysis and manipulation.
3. A laboratory for metallurgy and mining.
4. A laboratory for industrial chemistry.

While intended primarily for the instruction of the students, these laboratories will be used for the prosecution of experiments and investigations on subjects referred to them by the committee of the museum or the several committees of arts, including the examination and testing of new machines and processes, and the conducting of original research in the different departments of applied science; and in these critical studies and experiments the advanced students may, when expedient, be permitted to assist.

Laboratory of Physics and Mechanics.

In this laboratory it is proposed to provide implements and apparatus with which the student may be exercised in a variety of mechanical and physical processes and experiments. Thus he may learn practically the methods of estimating motors and machines by the dynamometer, of experimenting on the flow of water and air and other gases, and of testing the strength of the materials used in construction. He may become familiar with the adjustments and applications of the microscope; be practised in observing with the barometer, thermometer, and hygrometer; and, in a room fitted up for photometry, may learn the mode of measuring light produced by gas and other sources of illumination, and the value of different kinds of burners, lamps, and their appendages.

Laboratory for General Chemical Analysis.

In this laboratory provision will be made for a complete and comprehensive course of instruction in qualitative and quantitative analysis—embracing organic as well as inorganic substances—and blending lectures with the systematic practice of the laboratory.

Students proposing to take the course will be expected to have passed through the first two years' teachings of the Institute, or to be possessed of such knowledge of general chemistry and physics as these preliminary studies are intended to impart.

Besides this general and extended course, it is proposed to have certain partial courses in which students having a special object in view may obtain instruction of a specific kind without going through the entire range of laboratory training. Such would be—

1. Exercises in organic analysis.
2. Exercises in blowpipe testing.
3. Household and commercial analysis, including the testing of waters, detection of adulterations in food, etc., alkalimetry, acidimetry.
4. Chemical toxicology, detection of arsenic, and other poisons.

Laboratory for Mining and Metallurgy.

Connected with the general laboratory, but forming a distinct department, will be a laboratory of mining and metallurgy, designed for special instruction in whatever relates to practical mineralogy, the chemical valuation of ores, and the operations of smelting and other processes for the separation and refining of metals.

In this department students already trained to some extent in analytical processes will be exercised in the examination and discrimination of rocks and minerals by mechanical and chemical tests, including a course of practice with the blowpipe, and will be taught the several methods of assaying the ores and alloys of copper, iron, lead, silver, and other useful metals, as well by the dry as the wet method; of analyzing the fluxes used in the smelting furnaces and the slags resulting from the blast, and of determining the combustible value of the mineral or other fuel with which furnaces are supplied.

In aid of these instructions the student will have the opportunity of studying the models of mines and of mining and metallurgical implements and machinery, and the collections of rocks, fossils, minerals, and ores, with their manufactured products, provided and arranged specially to facilitate his studies in this department.

Laboratory for Industrial Chemistry.

It is further proposed to connect with the general laboratory a department of industrial chemistry, where students may have an opportunity of becoming practically familiar with the materials, implements, and processes of the more important chemical arts and manufactures.

In this department will be provided a collection of dyestuffs, mordants, discharges, and other substances used in the operations of dyeing, color printing, and bleaching, together with such apparatus as may be necessary, on a small scale, to exemplify these several processes as in actual use.

Here the student will have access to suites of specimens, embracing the crude materials and products of the glass and pottery and brick and tile manufactures, the different soaps, soda ash, bleaching salts, acids, saline products, lakes, pigments, inks, cements, tanning substances, and other materials and products of the chemical arts, and will be provided with facilities for studying practically the reactions and processes connected with their use and manufacture.

Provision will also be made in this laboratory for the practical illustration of the chemical modes of engraving and lithography, and for exhibiting the various methods and processes of electrometallurgy as applied to silvering, gilding, and the deposition of copper and brass.

These last paragraphs form a specific statement, which will be found to outline closely the laboratory instruction in physics, mechanics, general and industrial chemistry, metallurgy, and mining, as actually developed later, and as applied to the everyday *instruction of classes*. These ideas had been intimated more or less clearly in preceding publications, by Professor Rogers, but had (so far as known to the writer) been nowhere as definitely stated as here.

The quotations afford a clear idea of the intention of the managers of the Institute at the outset. That the progressive development of the work of the school in later years has followed with striking closeness the plan thus laid down is a tribute to the remarkable sagacity and foresight displayed in its design.

PRESENT SCOPE OF THE SCHOOL OF INDUSTRIAL SCIENCE.

The School of Industrial Science constitutes by far the most important and widely known part of the Institute, so that to most persons the title of the Institute denotes this alone. The school was opened in a restricted way, with a few students, in hired rooms, on Summer street, in 1864. In the first annual catalogue (1865-66) appear the titles of six regular courses, that in "general science and literature" being added to the five already enumerated (p. 295). As no students were to graduate till 1868 the work of the higher years was, of course, but little organized, but entire schedules of work in the first four courses were given. The growth of these several courses, and the addition of others, need not be here followed in detail. Continual active revision, improvement, and extension have characterized and still mark the work of the school.

The presidency of the Institute has been held by Prof. William B. Rogers, LL. D., founder and first president (1862-1870); Prof. John D. Runkle, LL. D. (1870-1878), and Gen. Francis A. Walker, LL. D. (1881), the present executive. Professor Rogers also held office for a period of three years (1878-1881) preceding the appointment of President Walker. Under the able administration of these gentlemen, supported by a faculty wholly devoted to the interests of the institution, and a corporation earnest for its progress and generous in its times of pecuniary embarrassment, the Institute has developed in spite of most serious financial difficulties with increasing, and latterly with very great, vigor, and holds a widely recognized position as a technical school of exceptionally broad scope and fine equipment. Its teaching staff in 1888-89 embraced 29 professors, associate and assistant professors, 36 instructors, 21 assistants, and 10 lecturers on special topics; and its registration of students numbered 827.

The general appreciation of the character of the Institute's work is indicated in some degree by the statistics of residence of its students. Of the 827 students registered in 1888-89, 211 were from outside New England (30 States, the Territories of Dakota, Wyoming, and New Mexico, and the District of Columbia, and several foreign countries being represented); 494

or 59.7 per cent. were from Massachusetts; 105 were from other New England States. Seventeen students were from the following countries, viz: Brazil, Greece, Guatemala, Hawaiian Islands, Ireland, New Brunswick, Peru, Canada, Scotland, Turkey, and the West Indies. Several Japanese have at various times been students, and three have taken the degree of the Institute.

In the register for the same year appear the names of 34 graduate students. Of these, 9 are graduates of Harvard University, 4 of Brown University, 3 of Yale University, 2 each of Vassar College and Georgetown College, and 1 each of Oxford University, University of Minnesota, University of the Pacific, Iowa State University, Oregon State University, Union College, Oberlin College, Wellesley College, Smith College, Hobart College, Haverford College, St. John's College, St. Mary's College, and the Massachusetts Institute of Technology. Sixteen of these are regular and 18 are special students.

At the present time (1889) the Institute has five buildings, viz: (1) The Rogers Building, on Boylston street (150 by 95 feet, 5 stories), devoted mainly to instruction in mathematics, literature, history, political science, biology, geology, and mineralogy, and containing, also, the John Cummings Laboratory of Mining and Metallurgy. This building also now contains the laboratory of mechanical engineering, and that of applied mechanics. These are, however, to be transferred during the current school year, to the engineering building now in process of erection.¹ (2) The new building (150 by 90 feet, 5 stories), located on the same square with the Rogers Building, and devoted to the departments of chemistry, physics, electricity, and architecture, and to instruction in language. The department of civil engineering is also located in this building, but will remove to the engineering building upon its completion. (3) The engineering building (150 by 50 feet, 6 stories), on Trinity Place, near the foregoing. This will be devoted to the drawing and recitation rooms of the civil and mechanical departments, and to the engineering laboratories. (4) A series of workshops (150 by 150 feet), on Garrison street. (5) A gymnasium and drill hall on Exeter street.

At present the Institute gives the degree of bachelor of science in the following courses, each of four years' duration. Students pursuing any one of these courses in full are classed as regular students.

	Estab- lished in—		Estab- lished in—
1. Civil engineering	1865	7. Natural history	1871
2. Mechanical engineering	1865	8. Physics	1873
3. Mining engineering	1865	9. General course	1865
4. Architecture	1865	10. Chemical engineering	1888
5. Chemistry	1865	11. Sanitary engineering	1889
6. Electrical engineering	1882		

The degree of master of science is given for proficiency in complete advanced courses of study of at least one year's duration.

¹ The removal took place as intended.

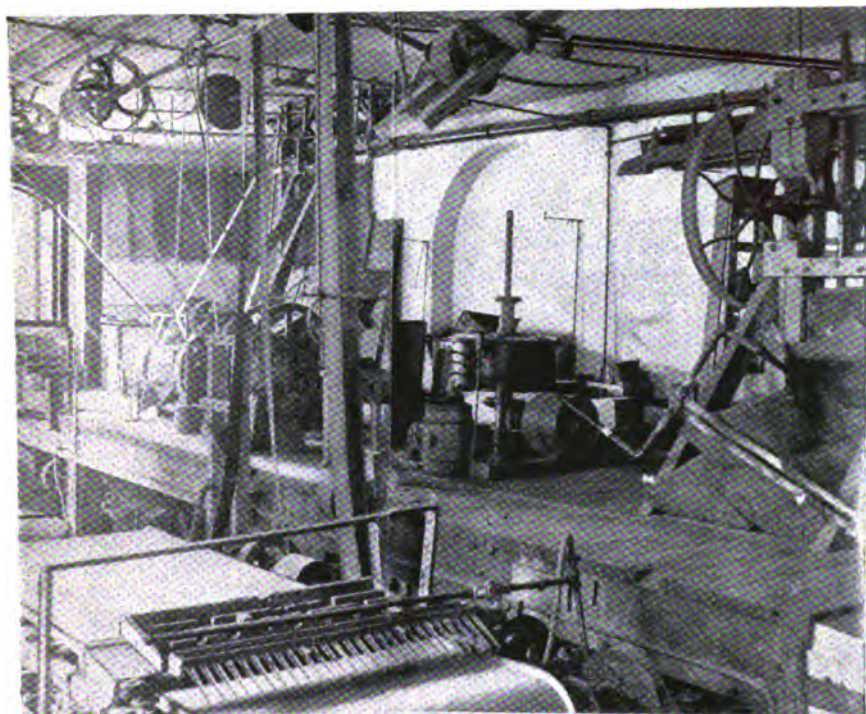
The degrees of doctor of philosophy and doctor of science are offered for proficiency in complete advanced courses of study of at least two years' duration.

In the various regular courses the first year's work is common to all, the subjects being either those demanded as preparation for subsequent professional study, or as training of either scientific or general character. At the beginning of the second year the student selects his course, which he must then follow during the three remaining years, with, however, some freedom in selection of lines of special study.

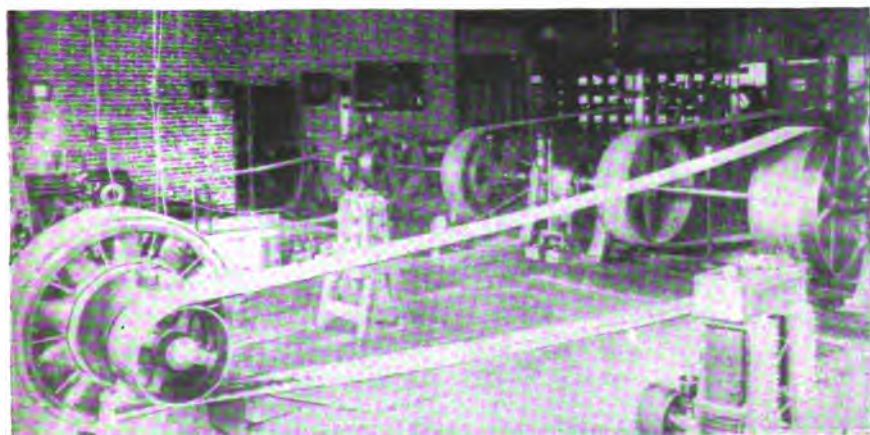
Specialization thus begins in the second year, and it increases progressively until, in the last year, little but purely professional work finds place. In almost all of the courses the student may choose among several parallel lines of study, and thus direct his efforts into one or another branch of his profession. Thus in civil engineering he may pursue a general engineering course, a geodetic course, or one in railroad construction and management. In mechanical engineering he may choose between steam, mill, and marine engineering; and similarly in other courses. But while this specialization is carried as far as consistent with the limit of time, yet the courses aim everywhere at a broad rather than a narrow training, both by the character given to the professional work and by the introduction of such topics as history, literature, political economy, and the modern languages. The latter are not only of direct service in gaining a prompt acquaintance with the results of invention and discovery, but are used to such an extent in the technical instruction in some courses as to require that they should be classed among the technical rather than the general subjects of those courses.

It is clearly recognized that, while the majority of the graduates of the Institute go at once into positions in the line of their study, yet it is almost certain that the duties which will fall even to those, and still more upon the minority who go into other lines of work, will very soon bring to them problems differing wholly, or in detail, from those which it was desirable or possible to present in the school. The curriculum, therefore, must produce men broad enough to meet such requirements; it must, as far as possible, give them independence and self-reliance by training them to observe and investigate for themselves, and not merely cram them with scientific facts or technical rules. It is not presumed that the graduates (of an average age of only 21 to 22 years) will be mature engineers, architects, chemists, etc.; but they should be young men with an education of scientific and practical nature, such as to afford the best basis for growth in their professions.

Special students are admitted to all departments of the school. That is, persons who are properly qualified to enter upon any one or more of the separate topics of instruction are allowed to do so; and, under proper restrictions, are allowed certificates of attendance upon such courses, or of honorable dismissal. A standing committee of the Faculty has general charge of the work of such students, who, in order to



MASSACHUSETTS INSTITUTE OF TECHNOLOGY—MILLING ROOM, MINING LABORATORY.



MASSACHUSETTS INSTITUTE OF TECHNOLOGY—FURNACE ROOM, MINING LABORATORY.

continue in any subject of study, must fulfill the same requirements as to scholarship, attention, and age as are imposed upon the regular students taking the same subject. The special students in 1888-89 were about 30 per cent. of all attending the school.

By this admission of special students it is intended to afford opportunities to those who, from want of time or means, or for other good reason, are unable to take a complete course. In addition to many students of the usual ages, a considerable number of persons of mature years are thus admitted for special lines of study, and the Institute is enabled to offer its facilities to many teachers and to persons of experience in other lines. But while the number of special students is thus large, and while it is earnestly desired to extend the many opportunities provided by the school to all properly fitted for them, it is the clearly understood policy that their presence shall not be allowed to become detrimental to the students in the regular courses. It frequently occurs that students entering upon a special course are eventually able to so arrange their studies as to complete the subjects required for a full regular course and to receive the degree.

Women are admitted to all the courses of the school, both regular and special, under the same requirements as men.

Arrangements have been made whereby regular students may, for sufficient reasons, plan to take the full course in five years instead of four, if they so desire.

There are also maintained at the Institute, by an annual appropriation by the trustees of the Lowell Institute, a school of design and free courses of evening lectures. The latter comprise about ten courses of twelve lectures each, given by members of the faculty, and open to applicants over 18 years of age. The courses are not popular lectures, but comprise substantial teaching.

The Lowell Free School of Practical Design gives instruction to about 60 students annually. It teaches the art of making patterns for prints, ginghams, delaines, silks, laces, paper hangings, carpets, oilcloths, etc. The course is of three years' duration.

PARTICULAR FEATURES.

A detailed examination of the characteristics of all the courses would be out of place here, as would also any statement of the particular features which mark the work of the individual courses. These appear more fitly in the catalogue of the institution. It is enough in this connection to call attention to the fact that the Faculty is unremitting in its efforts toward continual progress in the nature and quality of the work. The establishment of the courses in electrical (1882), chemical (1888), and sanitary (1889) engineering indicates the vitality of the school and its anticipation of the needs of the community; but not more than do the less publicly obvious developments in the already existing courses. For instance, in civil engineering notable

developments have been made in the instruction in such subjects as bridge and roof design, principles of construction, hydraulic engineering and hydrometry, geodesy and topography, railroad construction and management, etc.; in the various engineering courses, in the instruction in applied mechanics and in the principles of mechanism; in the course in natural history, in general and especially in sanitary biology. These are merely given as illustrations; in other courses and other lines than these the development has been not less marked, and in many it has, from the nature of the subjects, been greater, notably in those in which laboratories play a prominent part.

As special features of the work of the Institute, and as marking directions in which its work has been largely original and of wide influence in educational progress, the laboratories and their methods will be considered in some detail.

Also, as features of the work of the school, should be mentioned the courses which are held during the summer vacations, viz, in mining, topography, biology, etc., and the many excursions made during the terms by the students to manufacturing establishments of all kinds, mines, bridges, tunnels, and other objects of technical importance and interest; also the many lectures given by persons not connected with the Institute but engaged in active professional life.

Of the lecture and recitation-room instruction, it is unnecessary to treat at length, but it would be to overlook a most important element in the record of the Institute as well as in its effect viewed from an educational standpoint, were no statement to be made as to the high plane upon which its teaching has always been conducted. From the outset to the present, the instruction, as well in the lecture room, recitation room, and drafting room as in the laboratory and the field, has been notably that of an institution which leads rather than follows in the progress of education. Methods of presentation of subjects have been revised or originated; the application of science to the arts has been presented and enforced by practice; the most recent inventions and practical applications in all departments have been at once incorporated into the instruction; new practical problems and tests of importance have been and are continually being worked out experimentally and otherwise, often in part or wholly by students, and generally in such a way as to bring the student to apprehend the value and to acquire a knowledge of the methods of attacking such work.

Teaching of such character is obviously beyond and in advance of the range of text-books, and much of it can only be imparted by lectures or in the laboratory, drawing room, or field. In some branches the instructors of the school have been enabled to greatly facilitate their work by the printing of lecture or laboratory notes, and occasionally of new text-books. Most of these have been printed by the Institute for students' use only, and not for publication.

A notable advance has been made by the Institute, both at the time of

its inception and during its subsequent development, by the extension of the laboratory system of instruction in general chemistry, physics, mining and metallurgy, and later in industrial chemistry, mechanical engineering, biology, and shop work or manual training, and the development of field-work instruction and library research. In some of these lines the departure was entirely novel; in others it was merely an advance or change of methods to meet the existing conditions. In all, the Institute has maintained a leadership not merely from priority, but from the earnest and progressive effort which has been exerted, making its laboratories the object of study and approval by educators both at home and abroad—a testimony second in value, however, to that given by the success of its graduates.

The general objects of laboratory practice are to give training in scientific observation, experiment, and deduction from observed facts; to develop manipulative skill; to extend, fix, and render more definite the acquaintance with the subjects studied. In a technical school also the laboratory must be the means of communicating a large amount of direct technical knowledge and training. The object, however, is not merely or chiefly to impart technical and scientific facts or specific methods and processes, but rather to do this in such a manner as to prepare the student mentally to grapple at first hand with the fresh facts and problems which nature and the arts will inevitably present to him in his professional career.

A moderate amount of laboratory practice may suffice to accomplish this purpose, and it is by no means necessary, indeed it is probably not desirable, that it should be wholly in one subject. For example, at the Institute the earliest training is in the laboratory of general chemistry, a subject whose phenomena lend themselves readily to the progressive development of the beginner in scientific methods of qualitative observation, experiment, and deduction. The mechanical workshops give manual skill to those into whose line of work this falls. The laboratory of physics next gives training in experimentation of increasing complexity and exactness, involving measurement and mathematical discussion of results. Technical laboratory training, following or concurrent with this, goes on in the laboratories of mechanical engineering, applied mechanics, chemistry, mining, metallurgy, electricity, or biology. Field work in surveying, topography, geology, mining, etc., naturally replaces or supplements the technical laboratories in some of the courses.

The plans adopted for the laboratories, at least as applied to physics, mechanics, and mining, were essentially novel both in this country and abroad. Laboratories for the instruction of individual students, usually well advanced, and cabinets for lecture purposes were frequent, but in physics there were no laboratories for class teaching, and few, if any, for elementary instruction of any kind. Experimentation as a means of training as well as of teaching elementary physics was not in use. Of mechanics, much the same may probably be correctly said, and also of

mining, but this statement would probably not be true to the same extent of metallurgy or chemistry. Yet the teaching of general chemistry in the laboratory to large classes of beginners and in connection with lecture-room and text-book instruction was a decided innovation; and the Institute laboratories, organized in 1866, are believed to have been the first to deal with large numbers of students in this manner. Of them President J. D. Runkle said in one of his reports¹ to the Corporation:

This step of teaching laboratory work to large classes of pupils, and all in about the same stage of progress, was found to be the most economical for both parties, and the only system by which this element of instruction could be maintained with a large number of pupils.

In architecture, in laboratory instruction in physics as a part of the required course of each candidate for a degree, in the mining and metallurgical laboratories for the working of ores in quantities, and in the laboratories for teaching the nature and use of steam, the Institute has had the honor of having led the way.

The organization and development of these laboratories, and of others later added, will be briefly reviewed.

The Rogers Laboratory of Physics.

The establishment of the physical laboratory on a working basis and its development during its first ten years are concisely stated in a report by Prof. Edward C. Pickering, made to the president of the Institute, January 31, 1877:

At that time [1867] instruction was universally given by lectures and recitations illustrated by experiments and diagrams. A student wishing to pursue this subject further, might aid his instructor in preparing these experiments, and thus become qualified in his turn to deliver the lectures. The first step towards the introduction of a new order of things seems to have been taken by Prof. William B. Rogers, then president of the Institute, and professor of physics and geology. In a pamphlet entitled "Scope and Plan of the School of Industrial Science of the Massachusetts Institute of Technology," published in 1864, the following paragraph, headed "Practice in Physical and Chemical Manipulations," occurs. (See quotation ante.)

This appears to be the first clear statement of the desirability of teaching physics by the laboratory method, but owing to the pressure of other business and the lack of means the matter stopped at this point, and no definite plan was formed for carrying it out.

Accordingly, the first instruction of physics at the Institute was given by the usual illustrated lectures, and this continued to be the case for the two following years. Meanwhile my appointment in charge of the exercises in physics led me to consider whether a plan for a physical laboratory might not be developed, and, accordingly, in April, 1869, a scheme was offered to the government of the Institute.

This plan was carried out the following autumn and has been in operation ever since without sensible change, except in extending its scope.

Of the character of the work at the outset for the regular students an idea may be obtained by consulting Pickering's Physical Manipulation, which was published during Professor Pickering's connection with

¹ President's Report, September, 1876, p. 125.

the Institute. The first, and a portion of the second volume, represent work then in operation. Up to the present (1889) the general plan of this part of the work remains essentially the same, but very considerable changes have been made in the details. Increased facilities and experience, greater maturity of students, the establishment of laboratories in other departments, and the development within the domain of physics—notably in electricity—have been accompanied by corresponding modifications in the details of the instruction. The present elementary part of the work of the laboratory may be traced in the pamphlet “Physical Laboratory Notes,” printed, but not published, by the Institute for students’ use. The time spent in the laboratory by students in engineering and other courses in this kind of work is about 45 hours, and follows the completed lecture course in physics. It is almost exclusively quantitative in its character for two reasons: First, quantitative work seems to afford the student the most effective training in a given time and lends itself most readily to the maintenance of a high standard as to quality of work; second, thorough training in qualitative scientific observation has already been given to our students in their course in general chemistry two years before they reach the physical laboratory.

Students pursuing the four years’ course in physics or in electrical engineering, take additional work in the laboratory. After more advanced work in electrical measurements, becoming technical for the engineering students, they take up problems constituting more or less original investigations. Each student is required to work out at least one such investigation which he embodies in his graduating thesis. Such studies are continually developing material of value which is published from time to time. In this way there have been published by the instructors and students of the department of physics jointly or separately a large number of papers, of which a large portion are of permanent scientific or technical value.

Students in chemistry also take more advanced physical laboratory work in their fourth year.

The apparatus of the Rogers Laboratory, apart from that devoted to lecture-room demonstration, constitutes an exceptionally efficient working equipment, more notably in electricity, acoustics, and heat. The work done in electrical measurements assumes especial prominence, owing to the large number of students of electrical engineering. A dynamo room with an 80 horse-power engine, with dynamos of the Brush, Edison, Thomson-Houston, Gramme, and other types, with motors, an alternating current Thomson-Houston generator, transformers, a cradle dynamometer, switch board, and other requisite accessory apparatus, forms (1889) a part of the laboratory, and is arranged, as is the laboratory throughout, with a view to continuous use by students for experimental work.

In the students’ work in the laboratory it is intended to encourage

the spirit of scientific investigation and to render apparent those conditions which must govern such work to make the result of real worth. As bearing on these conditions, a discussion of the adjustment of the precision of measurements is given as a course in the students' fourth year, and the principles of the discussion are also freely applied throughout even the elementary work.

The Kidder Chemical Laboratories.

In the "Scope and Plan," laboratories of (3) general chemical analysis and manipulations and of (4) industrial chemistry were proposed.

Of these the first to be opened was a *Laboratory of General Chemistry* in 1866, in the Rogers Building on Boylston street, under the charge of Professors Eliot¹ and Storer. The instruction in this laboratory is carried on at the same time with the lecture course. In its original form the student performed from printed directions a large number of experiments and manipulations which familiarized him with the preparation and handling of chemical apparatus and enabled him to observe for himself the production, properties, and reactions of chemical substances. The faculties employed in scientific observation and experiment were thus cultivated, but the main object was the more effective teaching of chemical knowledge.

The text-book "General Chemistry," by Eliot and Storer, was published in 1867 and was used in the instruction. Its abridgment by Prof. William R. Nichols, in 1872, was made with special reference to use by the Institute students.

The work of the laboratory at the outset and for some years may be properly regarded as an educational experiment, and it has of course undergone a corresponding progressive development. It is believed to have been the first laboratory where instruction was given in general chemistry to classes of considerable size. But in 1884 a change in method of instruction was introduced which gave it a still more individual character, and which has been rapidly and extensively adopted elsewhere. This was brought about by Professor Nichols, who had been in charge in the laboratory since 1872, and Associate Professor Norton. The change consisted in assigning to the students a series of experiments by means of notes sufficiently detailed for their successful performance, but whose results were not described, but were to be observed, recorded, and reported by the student himself, with proper deductions and inferences. The result was to greatly increase the effectiveness of the laboratory work as a means of cultivating the powers of observation and manipulation. A pamphlet containing these experiments was published in 1884. It is with the aim of giving this early training in scientific observation that this laboratory course in general chemistry is made a requisite for all the regular first-year students and for most "specials" in the school.

¹ Now President Eliot, of Harvard University.

The influence of this laboratory on the teaching of general chemistry in this and other countries has been very powerful. Many Institute students trained in its methods are teaching, and a large number of experienced teachers, already engaged in or about to enter upon the teaching of natural science, have worked in it, not only during the last five years, but from the beginning. Its text-book is used in many other institutions, and its methods in still more. Its corps of instructors has increased from 1 professor to 1 professor, 3 instructors, and 3 assistants, and its students from 50 or 60 in 1866 to 295 in 1888.

The *Laboratory of Analytical Chemistry* was opened in 1867, under the direction of Professors Eliot and Storer. Its work has, of course, been gradually developed in the directions natural to a technical school and has been distinguished, particularly since 1875, by its thoroughness in inorganic analysis, especially in the line of metallurgical and furnace products.

Its course at present consists of qualitative analysis, preliminary quantitative analysis, and volumetric analysis, analysis of minerals, ores, products of the arts, such as iron, steel, alloys, slags, soap, fertilizers, etc. Through a large part of the course there is class-room instruction in close connection with the laboratory work, with a discussion of the results obtained by the class in the laboratory, and the reading of foreign chemical journals. A particular feature in the work is the investigation of new processes by the students. The substances analyzed have a close connection with the manufacturing industries, and are also selected with the idea of training in the selection of processes. Written memoirs are required on analytical processes, involving the consulting of books and journals in English, German, and French.

The classes in the laboratory have increased from about 10 to 80 students (1889), and the effect of the laboratory on technical and industrial work is probably best shown by the list of employments of the graduates, as given in the catalogue of the school.

The *Laboratory of Organic Chemistry* was opened in 1877, under the charge of Professor C. H. Wing. The work of its students has been devoted mainly to original research in pure and applied chemistry. But while pure chemistry has always received much attention, the aim has been chiefly to investigate those problems of organic chemistry which have a distinctly technical bearing. About 15 students are engaged in its work.

The *Laboratory of Industrial Chemistry*, opened in 1877, under Professor J. M. Ordway, is now somewhat highly developed. Instruction is given in the methods used in the production of chemicals upon a considerable scale. The aim is to accustom the men to processes such as are used in the works and to render them useful and skillful in dealing with manufacturing problems. Systematic training is given in experimental dyeing and coloring. In these features it stands alone in this country. It has about 20 students.

The *Laboratory of Sanitary Chemistry* was established under Professor Nichols in 1884. It has not only been used for training, but has exercised a wide influence through original work published from it in the line of sanitary chemistry. The water analyses of the Massachusetts State Board of Health have been made here for two years. This laboratory is believed to be unique. It contains 20 or more students.

The *Woman's Laboratory of Chemistry* was established in 1877, under the direction of Mrs. Ellen H. Richards, a graduate of the Institute, and was continued until 1883, when, owing to the removal of the temporary building in which it was located, it was given up as a separate laboratory. The Kidder Chemical Laboratories, opened in a new building in that year, gave relief from the former overcrowded condition, and women were then admitted to all the chemical laboratories on precisely the same conditions in all respects as the men. The original laboratory was built to meet a demand for the training of women in chemistry, particularly with reference to teaching. The construction of a temporary building for shop-work instruction and industrial chemistry afforded the increase of space necessary for the extension of laboratory facilities necessary to meet this demand. The laboratory has offered instruction to a large number of women. Some of these have gone out into technical work, but many more were or have become teachers. Through them the laboratory has exerted a powerful influence upon the teaching of elementary chemistry, and has, in many respects, quite remodelled it in quality and nature in the many positions into which these young women have gone. The following statistics call for little comment: There have been (1889) connected with the Institute, as students, 162 women, of whom 67 were at the school one year or less for special work, and 15 have taken the degree of S. B. of the Institute, viz: 11 in chemistry, 1 in natural history, 1 in physics, and 2 in the general course. The average number each year since 1876 has been 21. Of these students, 49 were teachers before coming to the Institute, 60 are teaching at present (so far as known), 20 are professors in colleges or are in charge of secondary schools or of laboratories, 17 are teachers of sciences other than chemistry, 12 are actively engaged in professional or educational work other than teaching, 10 are medical students; 19 of the students were college graduates before entering.

The Cummings Mining and Metallurgical Laboratories.

These were put under way in 1871-72, metallurgical work having previously been done in the chemical laboratories. To show their history and scope, quotation is made from the report of President Bunkle to the Corporation of the Institute, 1875:

These laboratories have become so important an element in our courses of mining and metallurgy, and are besides so novel in such a connection, that it may not be uninteresting to briefly review them in their origin and progress thus far in the history of the department. From the beginning, vacation excursions to mining regions

for the purpose of study by teachers and pupils have constituted an important element in the instruction, and in this systematic way many of the more important centers in the United States and Canada have already been visited. Not only in each locality have the geology, the minerals, the mode of their deposition and extraction, and their metallurgy been studied, but the opportunities have been used to make collections of cabinet specimens, and particularly of ores of each locality sufficient for quantitative study in these laboratories. The most important of these excursions took place in the summer of 1871, when a party of professors and students 21 in number, and nearly all belonging to the departments of mining and metallurgy, visited some of the most important points in Missouri, and afterwards spent some 6 weeks in studying all the more developed centers in Colorado and Utah. It was during this excursion, while observing the wrecks of fortunes strewn all over the Territories, that the thought occurred to us that much of this waste was due to a want of practical skill joined with scientific knowledge, and that the opportunity for experimenting upon comparatively large quantities of ores must be furnished to our students during their course as a part of their laboratory work. After disbanding the party I visited San Francisco, and had the good fortune to make the acquaintance of some skillful practical metallurgists, who were making the examination of ores a specialty and had built up laboratories for ore dressing on about the scale we needed; but the processes were detached, and no attempt was made to represent the best forms and kinds of machinery in use at that time in California for the reduction of gold and silver ores.

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Designs, drawings, and some apparatus for the equipment of the laboratory were obtained and some progress made.

These steps would have been fruitless if I had not been so ably and enthusiastically supported by Professors Ordway and Richards. The furnaces in the metallurgical laboratory were designed by Professor Ordway and built under his direction, while the mining laboratory has reached its present state of progress almost entirely through the ability, skill, and untiring energy of Professor Richards. Thus, what was a conviction has become a practical reality, and the entire credit for the existence of these novel laboratories is due to the professors, whose unfaltering faith in success has made them possible.

It is not supposed that the student's experience, gained in these laboratories in handling comparatively large quantities of ores, will supersede the necessity of that wider and more definite experience which can only be gained at the works; but it is claimed that he is made aware by his failures, if not by his successes, of the difficulties he is sure to encounter in actual practice, and is taught not to despise mere practical skill, but to proceed with great caution, and to enter upon constructions involving large expense only after careful preliminary investigation, such as the experience gained in these laboratories especially qualify him to undertake.

The laboratories have been subsequently developed under the charge of Professor Richards, but up to 1884 were much hampered by want of space. At that date, however, the space was more than doubled, and the laboratory, as refitted, contains an assay room, engine room, milling room, furnace room, weighing room, office, professors' laboratory, storage vaults, supply room, and washroom.

The character of the work at the outset was wholly tentative—to settle upon the processes which were available, the design and construction of apparatus, the quantities of ores that would be large enough to illustrate the processes, and yet not so large as to be a burden to the student. This period lasted from 1871 to 1876. From 1876 to 1884 new processes were from time to time tested and added to the list that were

already available. From 1884 to 1889 the apparatus has been brought up to its present high state of development.

In general, the work is so laid out as to teach the student the principles upon which the various processes are based, together with the regular routine of conducting the process, allowing him ample opportunity to encounter and overcome the various difficulties which occur in actual work, without overloading him with too large a quantity of ore to handle, on the one hand, and on the other, without giving him skilled workmen to perform the work and to make results come out as they should, through no effort of his. The student works upon quantities large enough to have his apparatus, his work of preparation, the execution of his work, and the final account of stock, strongly resemble the same on a commercial scale.

There were, prior to 1871, metallurgical laboratories in École des Mines of Paris, in the Royal School of Mines at London, in the Berg Academiën of Freiberg, Clausthal, and Berlin in Germany, as well as in several technical schools in this country. In these laboratories, the apparatus was designed for quantities not exceeding a few ounces for each test. In them the students were taught practically the principles involved in balancing the elements for the production of a suitable slag for iron, lead, and copper smelting. They were also taught the usual methods of assaying by fire the ores of gold, silver, lead, copper, iron, antimony, and tin. In some of the schools they were also given practice in the manufacture of small crucibles. The magnitude of this new departure taken by the Institute then will be apparent when it is stated that the working upon the scale of 500 pounds to 3 tons began here in 1871.

Laboratories of Mechanical Engineering and of Applied Mechanics.¹

Of these the objects have been concisely stated by Professor Lanza,² as follows:

There are three objects to be accomplished by them, namely:

(1) To give the students practice in such experimental work as a mechanical engineer is constantly liable to be called upon to perform in the practice of his profession, as evaporation tests of steam-boilers, steam-engine tests, calorimetric tests, valve setting, etc., teaching him to carry on his work with accuracy, and to take all proper precautions to avoid error.

(2) To give the student an opportunity to carry on original investigation.

(3) Another important function of such laboratories, which is entirely consistent with the other two, is that of taking up and carrying out systematic investigations of engineering problems, and this can be done in a laboratory, whereas it is only with

¹ In the engineering building, about to be occupied, all of the laboratories devoted to engineering work proper will be united, with increased equipment, under the title of "Engineering Laboratories." These will include the above, the laboratory for hydraulic measurements, etc., but not, of course, the laboratories of mining or of electricity. They will occupy two floors 150 by 50 feet each. [These laboratories were in service during the second half of the school year 1889-90.]

² On the Engineering Laboratory of the Mass. Inst. Technology; Inst. of Civil Engineers, London, xci, 1887-88.

very great difficulty that it can be done in a machine shop or a manufacturing establishment.

By publishing these results from time to time the laboratory will serve to add gradually to the common stock of knowledge.

The author [Professor Lanza] recognizes very fully the incapacity of the student, as a rule, to originate and carry out research without aid from his teachers, but it is precisely because the necessary aid is given and the necessary supervision exercised that a considerable amount of research has been accomplished in these laboratories. This is accomplished in two ways:

(1) The regular laboratory experiments are so turned by the instructor as to make them form an element in some investigations, and the students take the observations and work up the results, the necessary amount of checking being done and the necessary supervision being exercised to insure correct results.

(2) Original researches are actually carried on by the students in their graduating theses; some of them are, of course, more able to do this kind of work than others, but all are required to undertake original research, and only such supervision is exercised as is needed.

* * * *

Of the *Mechanical Engineering Laboratories* the germ appears in the "Laboratory of Physics and Mechanics," as outlined in the "Scope and Plan" But up to 1873 nothing more was done in the direction of mechanics, beyond that of elementary physics, than the performance of a few minor experiments or pieces of work in the physical laboratory, although in the second volume of his *Physical Manipulation*, Professor Pickering included a number of proposed experiments on mechanical engineering. In the year 1873-74 the mechanical engineering laboratory was organized under Prof. Channing Whitaker, but in a somewhat limited way for want of funds. It was slowly developed in the three following years and then remained in a nearly stationary condition until 1883. At that date Professor Gaetano Lanza succeeded to the charge of the department and a vigorous extension of the work has since been in progress. At the present time (1889) 1 professor, 2 assistant professors, 3 instructors, and 3 assistants have duties in this laboratory and the two next to be described.

The laboratory contains as a part of its equipment several steam-engines (80, 16, and smaller horse-power); surface condensers; machinery for study of transmission of power by belts and ropes; friction brakes of various forms; several steam and vacuum pumps; a 6-inch turbine wheel arranged so that it can be run under a head of 15 feet, and can be tested for power exerted, efficiency, etc.; several calorimeters of different kinds; dynamometers; cotton machinery; apparatus for testing injectors; mercurial columns; apparatus for study of flow of steam through orifices; apparatus for testing dynamometers; indicators, planimeters, gauges, etc.; three steam-boilers; and other boilers and engines located in other buildings are available for purposes of experiment.

As examples of the work done in this laboratory may be mentioned tests of evaporation power of boilers; of the effects of different cut-off, compression, back-pressure, speed, etc., of engines under constant or variable loads; calorimetric tests; dynamometric measurements; investigation of the tension required in a belt to carry a given power, at a given speed, with no more than a given amount of slip; experiments on the efficiency of condensers under different conditions; on the efficiency of a turbine, etc. Many of these and other pieces of work have led to published papers of permanent value.

The Laboratory of Applied Mechanics was organized 1881.

It was started with a Fairbanks' testing machine of 50,000 pounds capacity, which besides being used for making tensile tests of iron, rope, wire, etc., was also transformed in such a way as to enable full-sized beams to be tested for transverse strength and deflection, the allowable spans being any up to 25 feet. While this laboratory has since been much enlarged, both in space and equipment, the work upon the transverse strength and deflection of full-sized timber beams, both under concentrated and distributed loads, and on the strength of framing joints, has all along been a feature of the work of the laboratory, and the fact has been ascertained that the actual breaking strength of such timber beams is only about one-third or one-half as great as would be determined by calculations based upon the constants as given by such authorities as Rankine and Laslett in England, or Trautwine, Rodman, and Hatfield in America; the reason is that the constants which they give are based upon tests made upon small pieces, and hence are not applicable to cases which occur in actual construction. The resulting constants for full-sized beams, as determined in this laboratory, have been published in both countries, and are now generally accepted as correct wherever they are known.

The other machinery in this laboratory consists of an Olsen testing machine, of 50,000 pounds capacity, for tension and compression. Apparatus for making tests on the transverse strength and deflection of full-sized beams; a machine for testing the tensile strength of mortar and cements; a Prony brake and other machinery for making tests on the strength, twist, and deflection of shafts subjected to a combination of twisting and bending; a machine for testing the strength of ropes; the necessary accessory apparatus for measuring stretch, twist, deflection, etc.

The primary object of this laboratory is, of course, the instruction of the students; and it is believed that, besides the work in the recitation room upon the strength of materials, they should be taught to do the testing themselves, to obtain accurate results, and to observe the behavior of the materials when under stress.

While a considerable amount of investigation has been carried on in this laboratory, the experiments upon the transverse strength of timber, and on the strength of shafting under a combination of twisting and bending forces, are probably the most original; though some work has been done upon the modulus of rupture of cast-iron in the form of window lintels, upon the behavior of steel at different temperatures, and upon the effects of different methods of holding wire rope, etc.

Workshops.

Practical instruction in the nature of materials of construction and in the typical operations of the arts is a valuable adjunct to other instruction in engineering subjects. Shops have therefore been provided, and furnished with the more important hand and machine tools, and are used by all engineering students of the Institute. They thus acquire a direct familiarity with metals and woods, manual skill in the use of tools, and a knowledge of what can be accomplished with them. Instruction is given in carpentry, wood turning, pattern making, foundry work, forging, filing, metal turning, and machine-tool work.

These workshops were established in 1876 in accordance with the recommendations of President John D. Runkle. The suggestion was derived by him from the exhibition of the work of the Russian technical schools at the Centennial Exhibition in Philadelphia, in this year.

The fundamental feature of the method employed is that the work shall be designed not with reference to the construction of marketable



MASSACHUSETTS INSTITUTE OF TECHNOLOGY—FORGE ROOM.



MASSACHUSETTS INSTITUTE OF TECHNOLOGY—MACHINE, TOOL, AND LATHE ROOM.

objects, but solely with the view to impart the greatest amount of skill or information in the given time. The objects made by the students are thus intended to illustrate to the best advantage the typical or most important points in each kind of work upon which the student is engaged, and the best use of the tools and materials.

The shops of the Institute were the first in this country to be conducted on this method. At the outset it was appreciated that this class of teaching was not alone valuable as a part of the engineering courses, but that it would be of great service to boys or young men intending to enter mechanical trades. The opportunity was extended to such by the formation of a subsidiary school called the "School of Mechanic Arts," in which were taught, in addition to the shopwork, some of the ordinary high and grammar school subjects. A manual-training school, the first of its type, was thus established. It served a double purpose, first, as a school, second, as a model and stimulus for education of this sort in the community. Since the general adoption of its methods, it has been discontinued as a school at the Institute. Naturally, however, the shops remain in active service in the engineering courses.

Biological Laboratory.

The extension of biological science, and the rapidly increasing practical applications of its methods, have been met by the establishment, at first, of courses of instruction, and later by the equipment of a complete laboratory. Previous to 1883 the instruction was given by Prof. J. M. Ordway, and a small laboratory in a temporary building was put into operation. During 1883-84 new laboratory space was provided, and the instruction placed under the charge of Assistant Prof. W. T. Sedgwick. The instruction and laboratory facilities have been rapidly increased, and the subjects of microscopy, physiology, zoölogy, paleontology, anatomy, and bacteriology are now a part of the work of this department.

From the first it was undertaken to provide instruction in general biology, with abundant laboratory work, precisely as courses in general chemistry and general physics naturally precede the more special subjects. It was felt that the growing importance of biology in modern science, in education, and in sanitary fields made it requisite that the Institute should furnish the opportunity for work in these directions. The laboratory has now some 10 or more regular workers and 15 or more special, and in 1888-89 gave instruction to more than 50 students from other departments.

To give a scientific training as a preparation for the study of medicine, a course has been arranged in which experimental work in biology and physiology are a feature.

It is in sanitary biology, however, that the laboratory has lately been most extended and its usefulness most conspicuous. A bacteriological outfit has been secured, and at the present time, in addition to work of

instruction, all the biological work of the Massachusetts State Board of Health connected with water supply and sewage is done here. In this connection new methods have been devised, especially on the microscopical side, and quantitative results are now obtained where only rough qualitative approximations were previously possible. In work in sanitary biology this laboratory is probably in advance of any other in the country. Its research work has been limited, but not inconsiderable. Numerous papers have been published. The laboratory is much resorted to by teachers who find in its varied work special advantages for fitting themselves for school work.

LIBRARIES.

The libraries of the Institute form an important feature in its work. The various collections are not brought together, although there is one library of general literature; but each department has its separate working library, containing only those books and publications which are directly in its own line. These are not only accessible to the students, but reference to them forms an essential part of the students' work. The whole collection contains [1888] about 14,000 volumes and several thousand pamphlets. In some lines the collection is without an equal, and in each branch it contains a careful selection of the best text-books, special treatises, monographs, etc., and the more valuable periodical publications in the subjects germane to the work of the department. The many valuable libraries of Boston, both public and private, are either by right or through the courtesy of owners available to the students of the school.

EXPERT WORK.

An important influence of the Institute is to be found in the work which its professors and instructors have done in connection with technical or scientific affairs in the community—that is, as experts in the best sense of the term. While the Institute has persistently refused to give its indorsement to or to permit its name to be publicly used in connection with any inventions, discoveries, processes, or appliances, its laboratories and other facilities have been freely placed at the disposal, in any way consistent with its regular work, of those who brought such matters, whether scientific or technical or commercial, with the honest desire for critical examination or test. The members of the teaching staff have from time to time been engaged to a limited degree upon such questions and others of related character where their advice or knowledge was desired. Such intercourse between the Institute and business or technical men of the community has been greatly to the advantage of the latter through services rendered, and to the former by keeping the school and its work in touch with those into whose ranks its young men were to enter. The amount of this influence thus mutually exerted, although certainly great and increasing, can not be accurately estimated.

It could be expressed only by enumeration of instances which would be of a nature too personal for publication. Its existence strengthens the school in its relation with the public, but contains an element of a danger which had been apparent in the course of some institutions, but which has fortunately been thus far turned aside by the judicious practice of those connected with the school who have been engaged upon such matters.

PUBLICATIONS AND SCIENTIFIC PAPERS.

An indication of the intellectual activity of the Institute and its graduates is given by the "List of Publications of the Massachusetts Institute of Technology and of its Officers, Students, and Alumni: 1862-1887," published by the Alumni Association in 1888. This list contains 1,600 titles, which are mainly from the alumni and faculty of the school, and to this number should be added about 200 to bring it to June, 1889. A large part of these represent papers, pamphlets, text-books, and treatises of permanent, scientific, or technical value; and very many are the results of advanced original investigation. There are also published, in addition to the Annual Catalogue, President's Report, and Proceedings of the Society of Arts, three periodicals conducted wholly or in part by the students, namely: a fortnightly college paper called *The Tech*, a quarterly called the *Technology Quarterly*, and the *Technology Architectural Review*.

The *Quarterly* is intended to embrace the results of a portion of the original investigations conducted at the Institute by students, as well as members of the staff of instruction; articles descriptive of new processes and methods, and other matters of scientific or technical importance, contributed by the alumni, as well as from the Institute; reports and notes of Institute lecture courses on special subjects, and essays of a somewhat varied character. It will thus exhibit the tendency and scope of the more advanced work of the school. * * * The prospectus of the *Architectural Review* contemplates the issue of eight numbers yearly, each number comprising four or more large folio plates exhibiting the original work of the students of the department. The seven numbers already issued have been of unexpected interest and value, and the enterprise has received cordial and even enthusiastic recognition from many of the most eminent architects of the country.—President's Report, 1888.

GRADUATES AND PAST STUDENTS.

The nature and extent of the influence of the Institute upon the industrial arts and upon education was clearly foreseen by President Rogers and his early associates, and did not fail of clear statement by them in the "Objects and Plan" (*vide ante*) and elsewhere. The event has more than justified their predictions. The infusion into the community of great numbers of young men, all of whom had received more or less complete scientific and technical education, has proved a most notable, even extraordinary, factor in promoting the development of the practical industries. The material benefits which the Institute has thus conferred upon the State of Massachusetts certainly far exceed an equitable compensation for the several appropriations of land and

money granted. And in the country at large the direct effect has been less only in proportion to the number of students coming from and going beyond the State limits.

A measure of the amount of influence exerted is almost impossible to obtain. Its character is almost equally difficult of specification, and can be well apprehended only in individual cases and by persons intimately acquainted with the development of the practical industries. It is, however, easy to conceive that these industries demand men thoroughly and broadly trained in their technicalities. Yet the amount of purely technical knowledge carried into their work by such young men going from the Institute is by no means either a measure of or the strongest basis for their best influence. More important is the capacity which they should possess of applying their broader scientific knowledge and methods to the solution of the practical problems and the development of the manufacturing and other processes with which they meet.

Of this result accomplished the part due to graduates, and that due to former students not graduates, are not separable. The latter element is to almost the same extent ascribable to the Institute as the former, and is very large. It is strong not only because the number of these men is nearly as four to one of the graduates, but perhaps equally from the fact that among this class of students at the outset of the school was an unusually large number of more mature and especially earnest men taking special courses. These men, now in the prime of business careers, taken together with the graduates of the same period of the Institute's history, are, of course, those to whom one would turn as exponents of the value of its work.

A register of all graduates and their present occupations is kept by the secretary of the Institute and is published in its annual catalogue. Inspection of such a list, which it is obviously impracticable to give here, affords a certain, though far from complete, basis for estimating the influence of the alumni. Of all students who have been classed as students since its establishment, however, only one-fifth are graduates, viz, 654 up to June, 1889. The remaining four-fifths, viz, about 2,600, have remained longer or shorter times, taking special, usually restricted, courses. Of their present occupations the record is, at present, very incomplete. Besides the foregoing who have been in attendance on the school of industrial science, instruction has been given to many hundreds of young or more mature persons in the free school of industrial design, in the subsidiary school of mechanic arts (discontinued in 1889), and in free evening lecture and laboratory courses.

Some discussion of the statistics of graduates and their occupations are of interest. The data are taken from the annual catalogue printed in December, 1888. This shows that in the classes of 1868 to 1888, inclusive, there were 579 graduates. The employments of the men sur-

living and accounted for have been classified and the number grouped as follows, for the sake of statistical comparison:

- (1) Technical or professional work in the direct line of the course of study taken by the student.
- (2) Technical work, but not in the line of course taken as student.
- (3) Business management, etc., of a kind directly connected with course taken as student.
- (4) Business of a kind quite disconnected from course taken as student.
- (5) Teaching.
- (6) Other professional occupations (medicine, law, etc.).
- (7) Studying further.

It will be easily appreciated that the line of demarcation between groups 1 and 3 is very ill-defined, and it would perhaps be quite as well to class these two together. Certainly the relative percentages under groups 3 and 1 fail to come up to the ratio of the amount of business management to the technical work done by the graduates. The ratio is much greater, the men having, to a larger extent, become engaged in the business management (as in mills, manufacturing establishments, railways, etc.), which they have approached through the technical side, as engineer or chemist, etc., rather than through the counting house or office.

In order to compare the percentages for earlier and later classes, and at the same time to eliminate the errors which would enter in using figures based upon averages of a few students, as when single classes are taken, the averages have been taken by combining the classes from 1868 to 1879, inclusive, and again from 1880 to 1888, inclusive.

The results are :

GRADUATES (LIVING AND HEARD FROM).

Classes of—	Number of graduates in—							
	1	2	3	4	5	6	7	Total.
1868-79, inclusive.....	129	29	4	29	20	8	1	220
1880-88, inclusive.....	202	34	8	17	42	6	19	328
1868-1888, inclusive.....	331	63	12	46	62	14	20	548

PERCENTAGES.

1868-79, inclusive.....	59	13	2	13	9	4	0.5	.....
1880-88, inclusive.....	61	10	3	5	13	2	6.0	.....
1868-1888, inclusive.....	60	12	2	8	12	2	4.0	.....

The interpretation of these figures must be made with caution. It is obvious that the majority (60 per cent.) of the graduates continue in the technical professions upon which the Institute launched them. About 12 per cent. are found in technical work in other lines than that for which their course directly prepared them, yet for which,

doubtless, their technical training was a good general basis. The 2 per cent. of group 3 are mainly or wholly men who have grown into purely business management or superintendence in kinds of work in which they have first been engaged technically in the lines of their Institute training. This is doubtless a very desirable outcome of the work of this portion of the men, and there are certainly many grouped under 1, whose work is largely that of group 3, but who still are, to some extent, engaged in the technical part of the business.

Group 4 contains about 8 per cent. of the graduates. These, with perhaps half of group 6, represent all the men who are not engaged upon work for which their Institute career was designed as a more or less training. It is and has always been claimed for the technical courses that while they were not specially designed to fit men for a general business career, yet they afforded a training which would be at least as valuable for that end as a classical course. It would be interesting to know the opinions of this 8 or 9 per cent. upon the justice of this claim. There has, however, always been at the Institute a course more or less general in its nature, but upon a scientific rather than a classical basis, which was intended for such men. Those who have taken that course and have gone into business are classed under group 1 and not under 4; they make up, however, but a small number. The percentage of teachers is 12, as given by column 5. Of these about two-thirds remain on the teaching staff of the Institute, one-fifth being members of the Faculty. About 2 per cent. of the graduates are physicians, lawyers, etc., and 4 per cent. are engaged upon advanced studies at the Institute or abroad. From these figures the inference that the Institute is training a class of men wanted by the community is inevitable, and this inference is made still more imperative by the readiness with which the graduates find immediate employment. In some departments the demand, by direct applications, for men has repeatedly exceeded the number available, on some occasions more than twice the number graduating from one class in the department having been called for in the course of a year.

That the influence of the institution is wide-reaching is shown by the geographical distribution of its graduates, as well as that of its students, already presented. The following table gives the number of graduates (out of 550 living and heard from) as located in the several States and Territories and in foreign countries in the pursuit of their regular vocations. Of these but 20 are still students, viz, 4 in Germany and 16 in this country.

It is interesting to remark the return which the Institute must have made, or, rather, must be making to the State of Massachusetts, through the influence of 275 graduates (or just one-half of those here considered) and probably very nearly the same proportion of all those now living up to the class of 1889, now resident in the State. If the same fraction of former students not graduates remains, their number would be about 1,300.

Geographical distribution of 550 graduates of the Institute, as reported in October, 1888.

UNITED STATES.					
		Minnesota	13	Wisconsin	3
Alabama	2	Missouri	5	Wyoming	2
Arkansas	1	Montana	2	Total in 42 States and	
California	7	Nebraska	3	Territories	
Colorado	16	Nevada	2	<hr/>	
Connecticut	8	New Hampshire	9	526	
Dakota	1	New Jersey	9	<hr/>	
Florida	1	New Mexico	1	FOREIGN COUNTRIES.	
Georgia	2	New York	30	Argentine Republic	1
Idaho	1	North Carolina	2	Australia	1
Illinois	27	Ohio	18	Canada	6
Iowa	5	Pennsylvania	35	China	1
Indiana	1	Rhode Island	6	England	3
Kansas	4	South Carolina	1	France	1
Kentucky	7	Tennessee	2	Germany (students)	4
Louisiana	1	Texas	1	Hawaiian Islands	2
Maine	4	Utah	1	Japan	4
Maryland	1	Vermont	6	Mexico	1
Massachusetts	275	Washington	3	Total abroad	
Michigan	3	Washington, D. C.	3	<hr/>	
		West Virginia	2	Grand total	
				<hr/>	
				550	

BOSTON, MASS., *October, 1889.*

CHAPTER XIV.

WORCESTER POLYTECHNIC INSTITUTE.

BY HOMER T. FULLER, PH. D.

This institute was chartered by the legislature of Massachusetts May 10, 1865, and opened for the reception of students November 12, 1868. It is authorized to hold property to the amount of \$1,000,000. The city of Worcester, where it is located, contains over 80,000 inhabitants, who are largely engaged in greatly varied manufactures, the successful prosecution of which requires both for design and execution unusual intelligence and skill. The atmosphere of the city is one of industry, enterprise, and culture. It is, therefore, a location highly advantageous for such a school.

The institution, which has already graduated eighteen classes, was established through a conviction on the part of its founders that it was possible advantageously to unite in a course of training thorough mental discipline and a knowledge of the applications of science to some of the practical arts. The experience of all who have been immediately connected with the institute, and of those who have been more remote and occasional observers of its work, confirms the confidence of its trustees in the wisdom both of the general principles of its organization and of the methods by which its purpose has been attained.

FOUNDATION.

The institute was founded by John Boynton, esq., of Templeton, in 1865, and its scope and purpose are set forth in the following extract from his letter of gift, dated May 1, 1865:

Being desirous to devote a portion of the property which, in the good providence of God, has fallen to my lot, for the promotion of the welfare and happiness of my fellow men, I have determined to set apart, and do hereby set apart and give the sum of *one hundred thousand dollars*, for the endowment and perpetual support of a free school or institute, to be established in the county of Worcester, for the benefit of the youth of that county.

The aim of this school shall ever be the instruction of youth in those branches of education not usually taught in the public schools which are essential and best adapted to train the young for practical life; and especially that such as are intending to be mechanics or manufacturers or farmers may attain an understanding of the principles of science applicable to their pursuits which will qualify them in the best manner for an intelligent and successful prosecution of their business; and that such as intend to devote themselves to any of the branches of mercantile business shall in like manner be instructed in those parts of learning most serviceable to them; and



WORCESTER POLYTECHNIC INSTITUTE.

that such as design to become teachers of common schools, or schools of a like character as our common schools, may be in the best manner fitted for their calling; and the various schemes of study and courses of instruction shall always be in accordance with this fundamental design, so as thereby to meet a want which our public schools have hitherto but inadequately supplied.

This general aim has been steadily kept in view, and others, chiefly residents of the city and county, without whose coöperation the early purpose of the school could not have been realized, have generously supplemented the original gift, and have enabled the school more perfectly to fulfill the intent of its founder.

GENERAL PLAN.

The institute offers a good education, based on the mathematics, modern languages, physical sciences, and drawing, and a thorough knowledge of some branch of applied science. It is especially designed to meet the wants of those who wish to be prepared as mechanics, civil engineers, chemists, or designers, for the duties of their respective professions.

The plan of organization is in the main that of the polytechnic schools of Europe, but with such modifications as are rendered necessary by differing conditions. Special prominence, however, is given to the element of practice which is required in every department.

In favor of this feature of the training adopted at the institute there may be assigned the following reasons:

(1) The fact that some of the most successful and sagacious manufacturers and business men, as well as many able educators, continually recur to the idea of combining manual labor with school instruction shows the increasing demand for a closer union of theory and practice in technical training.

(2) Those who are actively engaged in the practice of engineering are generally agreed that every young man training for an engineer should acquire familiarity with the practical side of his profession. The acquirement of the manual dexterity, conceded by all to be desirable, may precede, accompany, or follow the theoretical instruction. In this school the two are combined.

(3) Most of the young men who have graduated from the institute have readily found employment in situations for which their technical education particularly prepared them, and have proved themselves well fitted for their work.

But while practice is made thus prominent, it is insisted that it should spring from a clear comprehension of principles. Practice is not an end, but a means and help to the best instruction. With this view of its relation to theoretical work in the school training, the student's entrance on the pursuit he has chosen becomes an expansion of his course of study rather than an abrupt transition to a new sphere of life.

In acquiring knowledge of any form of handicraft, or of the practical industries by which society is supported and carried on, it is essential

that the student should work under conditions as like as possible to those which he will meet in life. The more his work is subjected to the inexorable tests of trade, and the more he feels just the same responsibility that is inevitable in actual business, the better.

Practice in the school is subject to two conditions: First, it shall be a necessary part of each week's work; secondly, it shall be judiciously distributed and constantly supervised.

At the middle of the junior year every student who has not already done so chooses, with the permission of the faculty, a department, and must pursue the studies of that department till the end of his course. The mechanical engineers practice in the shops from the beginning of the apprentice half-year, and their practice extends over the whole course of $3\frac{1}{2}$ years.

CONDITIONS OF ADMISSION.

Candidates for admission to the junior class must have attained the age of 16 years. As a fact the average age of those admitted is over 18 years, and under that age candidates are seldom mature enough for success in the work required. They must give evidence of proficiency in the common English branches, viz, history of the United States, geography, grammar, and arithmetic; in French, plane geometry, and algebra as far as quadratic equations.

In geometry the first five books of Wentworth's Geometry are recommended for preparation, accompanied by the solution of original problems.

The requisitions in algebra are represented by the contents of Olney's or Greenleaf's Higher Algebra as far as quadratic equations, including involution, evolution, theory of exponents, and radicals.

In history Johnston's History of the United States represents the kind and amount of work the applicant should have done.

In English all candidates for admission will be examined on syntax and the criticism of incorrect constructions, and will be required to write an essay, correct in spelling, punctuation, division into paragraphs, grammar, and expression, on some subject assigned at the time of examination. Every candidate is expected to be familiar with all the books prescribed for any given year. Special attention is called to the necessity of complete familiarity with the principles of English grammar.

The requirements in French are, (1) the ability to read easy French prose, and (2) proficiency in elementary grammar.

While the conditions of admission comprise only the requisites mentioned above, yet it is advisable that candidates before applying take a full high-school course, including, if possible, such knowledge of Latin, Greek, and ancient and mediæval history as is generally required for admission to college.

The entrance examination is intended to satisfy the faculty that each candidate gives reasonable promise of success in the studies of the institute. All candidates are held to be on probation until the end of the

first half-year, and the student's standing at that time determines his future course.

In case there are several candidates for admission who reside at or near one of the larger cities of the country outside New England, an examination for admission in January or June may be arranged for at such point, provided applicants give notice to the president of the faculty at least 6 weeks prior to the time of regular examination in Worcester. For such special examinations a fee of \$5 will be paid by each applicant.

Students can enter an advanced class at the time of any regular examination, after satisfactory examination in the work already pursued by that class.

APPRENTICE CLASS.

A class is received at the beginning of the second half-year on the following conditions:

(1) Each applicant shall pass the requisite examination for admission to the institute.

(2) The class will spend 37 hours a week in the shop, 6 in free-hand drawing, and 5 in recitation, till July 1. The shop work will be in the wood room.

(3) In September following their admission, the members of this class who pass the examination in June will join the regular junior class, and proceed with the course of study as it is laid down in the catalogue.

(4) Any student is liable to be dismissed from this class who does not, during the preparatory half-year, evince decided aptness for mechanics.

(5) These rules are subject to such changes and revision as experience may indicate.

Special attention is called to the fact that all *beginners in mechanics must* enter the apprentice class.

The capacity of the wood room limits the number in this class to 32.

ORGANIZATION.

The training of students preparing to be mechanical engineers occupies $3\frac{1}{2}$ years; that of all others 3 years of 38 weeks each. There are, therefore, four classes, viz: Apprentice, junior, middle, and senior.

PLAN OF INSTRUCTION.

Instruction is given by recitations, lectures, and practice, which together constitute a symmetrical course of study. The course closes with the preparation by each student of a thesis or report. Members of the apprentice class who appear in the junior class are excused from free drawing for the first half year; and during senior year the courses for the different departments vary, but otherwise all students attend the recitations and lectures appointed for their respective classes. But the exercises in practice are widely different.

Recitations.—The classes recite in small divisions, and time enough is allotted to each recitation to secure the utmost thoroughness.

Lectures are given by all the professors on topics suggested by their work, as occasion may demand, and in some departments this form of instruction is, of necessity, chiefly employed. Students are in all cases required to take notes and to sustain examination on the lectures.

Courses of study and practice are offered in the following departments.

1. Mechanical engineering.
2. Civil engineering.
3. Chemistry.
4. Electrical engineering.
5. Physical and political science.

Theses.—Each student before graduating is required to prepare and submit to the faculty a satisfactory report or thesis on some subject connected with his special department. At commencement abstracts of these papers are presented by the members of the graduating class.

OUTLINE OF STUDIES BY DEPARTMENTS.

[The figures indicate the hours per week for each study.]

1.—MECHANICAL ENGINEERING.

Apprentice half-year. (January to June.)

English, French, 5.
Free drawing, 6.

Shop.—Practice in woodwork and molding, 36½.

Junior year.

First term:

Algebra, 3.
Geometry, 3.
German, 4.
Theoretical chemistry, 3.
Physics.—Properties of bodies, mechanics, and sounds, 3.
Practice, 10.

Second term:

Algebra, 1.
Solid geometry, 2.
Trigonometry, 2.
Analytical geometry, 1.
German, 4.
Theoretical chemistry, 5.
Physics.—Light and heat, 3.
Free drawing, 4.
Mechanical drawing, 2.
Practice, 10.
Additional summer practice, 168.

Middle year.

First term:

Analytical geometry, 4.
Descriptive geometry, 3.
German, 4.
Chemistry (qualitative analysis) and mineralogy, 2.
Physics.—Electricity, 1.
Free drawing, 2.
Mechanical drawing, 6.
Practice, 10.

Second term:

Calculus, 6.
German, 4.
Chemistry (qualitative analysis) and mineralogy, 2.
Metallurgy, 1.
Applied physics, 1.
Physical laboratory, 2.
Steam engineering, 2.
Free drawing, 2.
Mechanical drawing, 4.
Practice, 10.
Additional summer practice, 168.

Senior year.

First term:

Theoretical mechanics, 3.
Applied mechanics, 2.
Thermodynamics (second half), 2.
History and literature, 5.
Industrial chemistry (first half), 2.
Applied physics.—Electricity, 2.
Physical laboratory, 2.
Mechanical drawing, 4.
Steam engineering, 2.
Practice, 10.

Second term:

Applied mechanics, including hydraulics and kinematics, 5.
Steam engineering, 1.
Thermodynamics (first half), 2.
Political science, 5.
Geology (second half), 2.
Thesis work.—Engineering or electrical laboratory, 6.
Practice, including machine design, 10.

II.—CIVIL ENGINEERING.

Junior year.

First term:

Algebra, 3.
Geometry, 3.
English, 1.
German, 4.
Theoretical chemistry, 5.
Physics.—Properties of bodies, mechanics, and sound, 3.
Free drawing, 6.

Second term:

Algebra, 1.
Solid geometry, 2.
Trigonometry, 2.
Analytical geometry, 1.
German, 4.
Theoretical chemistry, 3.
Physics.—Light and heat, 3.
Free drawing, 4.
Mechanical drawing, 2.
Plane surveying. — Lectures, field practice, platting, 10.
Additional practice, April, June, and July, 168.

Middle year.

First term:

Analytical geometry, 4.
Descriptive geometry, 3.
German, 4.
Physics.—Electricity, 1.
Free drawing, 4.
Mechanical drawing, 6.
Topographical surveying.—Lectures, field practice, mapping, 10.

Second term:

Calculus, 6.
German, 4.
Chemistry, qual. analysis, 2.
Mineralogy, 2.
Metallurgy, 1.
Applied physics, 1.
Steam engineering, 2.
Free drawing, 2.
Mechanical drawing and stereotomy, 4.
Railroad engineering. — Lectures, field practice, mapping, estimates, 10.
Additional practice, April, June, and July, 168.

*Senior year.***First term:**

Theoretical mechanics, 3.
 Applied mechanics, 2.
 Thermodynamics (second half), 2.
 History and literature, 5.
 Industrial chemistry (first half), 2.
 Applied physics.—Electricity, 2.
 Physical laboratory, 2.
 Mechanical drawing and stereotomy, 4.
 Steam engineering, 2.
 Stresses in trusses, roads, streets, and pavements, cements and mortars, and lectures on various subjects, 10.

Second term:

Applied mechanics, including hydraulics, stone arches, and retaining walls, 5.
 Thermodynamics (first half), 2.
 Political science, 5.
 Geology (second half), 2.
 Steam engineering, 1.
 Thesis work, 6.
 Stresses in bridge trusses, bridge designing, iron arches, high reservoir walls, lectures on various subjects, 10.

III.—CHEMISTRY.*Junior year.***First term:**

Algebra, 3.
 Geometry, 3.
 English, 1.
 German, 4.
 Theoretical chemistry, 5.
 Physics.—Properties of bodies, mechanics, and sound, 3.
 Free drawing, 6.

Second term:

Algebra, 1.
 Solid geometry, 2.
 Trigonometry, 2.
 Analytical geometry, 1.
 German, 4.
 Theoretical chemistry, 3.
 Physics.—Light and heat, 3.
 Analytical chemistry, 9.
 Technical German, 1.
 Free drawing, 6.
 Extra laboratory work (during term), 100.

*Middle year.***First term:**

Analytical geometry, 4.
 Descriptive geometry, 3.
 German, 4.
 Mineralogy, 4.
 Physics.—Electricity, 1.
 Mechanical drawing, 6.
 Analytical chemistry, 9.
 Technical German, 1.

Second term:

Calculus, 6.
 German, 4.
 Metallurgy, 1.
 Applied physics, 1.
 Physical laboratory, 2.
 Free drawing, 4.
 Mechanical drawing, 6.
 Analytical chemistry, 11.
 Technical German, 1.
 Extra laboratory work (during term), 168.

*Senior year.***First term:**

Chemical philosophy, 1.
 Organic chemistry, 3.
 History and literature, 5.
 Industrial chemistry (first half), 2.
 Applied physics.—Electricity, 2.
 Physical laboratory, 2.
 Mechanical drawing, 4.
 Analytical chemistry, 11.
 Technical German, 1.

Second term:

Organic chemistry, 4.
 Technical German, 1.
 Political science, 5.
 Geology (second half), 2.
 Special chemical work, 15.
 Extra laboratory work (during term), 68.

IV.—ELECTRICAL ENGINEERING.

[A four and one-half years' course.]

For three and one-half years the course is identical with that pursued by the students in the mechanical engineering department. The last year of the course is devoted entirely to electrical work, according to the following plan:

First term:

Mathematical theory of electricity, 3.
Dynamo electric machinery, 3.
Applications of electricity.—Signals, telegraph and telephone systems, etc., 2.
Laboratory work.—Electrical measurements, determination of constants and construction of apparatus, 20.
Reading and reports.

Second term:

Applications of electricity.—Illumination, transmission of power, etc., 2.
Electrical engineering.—Design of dynamo, electric machinery, lines, stations, etc., 6.
Laboratory work.—Magnetic measurements, efficiency tests of dynamos, motors, batteries, and lamps, 20.
Reading and reports.

V.—PHYSICAL AND POLITICAL SCIENCE.

Junior year.

First year:

Algebra, 2.
Geometry, 3.
Trigonometry, 1.
English, 1.
German, 4.
General chemistry, 5.
Physics.—Properties of bodies, mechanics, and sound, 3.
Free drawing, 6.

Second year:

Algebra, 2.
Solid geometry, 2.
Trigonometry, 1.
German, 4.
General chemistry, 3.
Physics.—Light and heat, 3.
Analytical chemistry, 10.
Scientific German, 1.
Free drawing, 4.
Mechanical drawing, 2.
Extra laboratory work (total hours), 100.

Middle year.

First term:

Analytical geometry, 5.
Scientific German, 2.
Physics.—Electricity, 2.
German, 4.
Applied physics, 1.
Mineralogy, 4.
Mechanical drawing, 6.
Analytical chemistry, 7.
Extra laboratory work (total hours), 68.

Second term:

English literature, 3.
Geology, 2.
Metallurgy, 1.
German, 4.
French, 3.
Physics.—Heat, 1; electricity, 1.
Applied physics, 1.
Physical laboratory, 2.
Scientific German, 2.
Sanitary chemistry, 4.
Mechanical drawing, 4.
Field botany and geology (total hours), 168.

Senior year.

First term:

Political economy, 5.
 History, general and constitutional,
 6.
 Physics.—Electricity, 1.
 Applied physics, 3.
 Physical laboratory, 9.
 Chemistry.—Water analysis, 4.

Second term:

Political science, 5.
 Advanced political economy and constitutional history, 5.
 Physical laboratory, 10.
 Applied physics, 1.
 Geology and industrial chemistry, 2.
 Thesis work, 6.

STUDIES COMMON TO ALL DEPARTMENTS.

Certain studies are common to all the departments, for it is the aim of the institute to give as complete a general education as possible as well as to point out the true relation of theory and practice. These are chiefly the following:

MATHEMATICS.

The work in pure mathematics extending over 2 years' time, embraces algebra, geometry, trigonometry, analytical geometry, descriptive geometry, and calculus. (See scheme above.)

MODERN LANGUAGES.

In this institute great importance is attached to the study of modern languages. French and German are studied for their disciplinary value, for the intrinsic worth of their literature, and for the advantage to the scientific student in availing himself of the information relating to his special department to be found in works in these languages. The power to converse in French and German is not aimed at, but rather the ability to read well French and German. For this purpose the thorough and systematic study of their structure and idioms is indispensable.

For entrance are required the reading of easy French prose and the translation of simple English into French. In the apprentice year French is continued, and there is also the critical study of one or more standard authors in English.

During junior and middle years all students have German, and in this work translation of English into German is constantly employed in connection with the translation of German into English. In these exercises and in all others careful attention is devoted to the correct use of English, and constant practice in writing is required.

HISTORY, LITERATURE, AND POLITICAL SCIENCE.

In the senior year, by means of lectures, text-books, recitations, extensive and thorough reading, oral reports, essays, and debates, the attempt is made to familiarize the students with the history and literature of their country and to secure for them a clear and correct style of speaking and writing.

The greater part of the time of the senior year is devoted to political science. The design is to instruct the students in the political institutions and history of the United States, and to make them as familiar as the time will admit with the economic and industrial problems of the time.

PHYSICS.

Instruction in this subject commences with the course and extends through 2½ years. Three terms are devoted to lectures and recitations in general physics. For experimental illustration a large collection of modern apparatus has been purchased recently from the best makers.

Following the lectures on general physics is a course of laboratory work extending through one year. The exercises prepared for the students' practice are chiefly quantitative, involving measurements in all departments of physical science, special attention being given to electricity.

Fifty lectures on applied physics are given in the fourth and fifth terms of the course, electric lighting and the transmission of power by electricity being the principal topics.

The rooms of the department are in the new Salisbury laboratories, occupying the whole of the second and portions of the first and basement floors. A small stone building in whose construction no iron was used has been erected near the southeast entrance to the grounds. This building will be connected with the Salisbury laboratories by heavy wires, will contain standard galvanometers and apparatus for magnetic measurements.

The laboratory in all its departments is well equipped with instruments for precise measurements, of the latest models of approved workmanship. It also possesses for electrical work several dynamometers for power measurements, together with dynamo-electric machines and motors of various types.

CHEMISTRY.

The work in chemistry for all students is as follows:

During junior year a course of instruction is given in theoretical chemistry. This includes an introduction to the subject, a description of the nonmetallic and metallic elements and their compounds. Two lectures are given each week, a weekly recitation of the class by divisions is held, and the students are required to work in the laboratory two hours per week for one term.

In middle year, a course of lectures is given on the metallurgy of iron and steel, including the examination of ores, methods of blast-furnace reduction, and uses of the products—especially for foundry work and the manufacture of wrought iron and steel by various processes—influence of other elements on iron and steel, corrosion of these and other metals and best methods of preventing such corrosion, and the comparative value of iron and steel in structural work.

In this year also, for the students in all departments except that of chemistry, there is a brief course in qualitative analysis, including laboratory work with special reference to the examination of alloys and minerals.

MINERALOGY.

The work in this subject taken in middle year embraces the study of crystallography and other physical properties of minerals, the use of the blowpipe, the examination and determination of specimens by physical characters and by both dry and wet tests, the uses of minerals in the arts—as for reduction to metals, for fluxes, pottery, pigments, etc.—and the constitution of the more common rocks.

INDUSTRIAL CHEMISTRY.

In the first term of senior year there are lectures given on various technical subjects, such as fuels, gases for illumination, petroleum and its products, alcohols, fats and oils (with special reference to their use as lubricants, and the best methods of detecting injurious impurities), nitroglycerin and similar explosives, and aniline dyes.

GEOLOGY.

The instruction in this subject is given in the last term of senior year, and includes lectures, recitations, examination of hand specimens, and some field work; the glacial markings and deposits, the different outcropping strata, and the extensive quarries in Worcester and vicinity affording ample material for illustration. The divisions of the subject to which most attention is given are:

I. Dynamical geology, including the physical and chemical agencies which have wrought changes on the face of the earth.

II. Structural geology, embracing lithology, or the study of the mineral composition and minuter structural features of rocks—in which valuable aid is rendered by the use of a Nachet's (grand modèle) microscope constructed specially for petrographic work—stratigraphy, jointed structure, folds, faults, dikes, veins, etc., and

III. So much of historical geology in outline and general age-characteristics as the time will admit.

DRAWING.

All students are taught free-hand drawing. The course for the apprentice year embraces (1) blackboard practice, (2) the principles of orthographic and isometric projection as applied to construction in the shop, (3) the principles and practice of lettering, (4) outline sketching from geometrical solids and natural objects. During junior year the student is given (1) advanced outline drawing from objects, working models, and from machinery, (2) principles of light and shade as applied to object drawing, (3) sketching and shading from nature. In the

middle year the time is allotted to (1) diagram drawing and enlarging in color, (2) principles of color as applied to free-hand object drawings, (3) sketching and coloring from nature.

In the mechanical drawing room instruction is given in the use of instruments, shading and coloring, plane and isometric projections, and the theory of shades, shadows, and perspective; also, in making detailed and finished working drawings of machines from specific data, including the drawings used in the construction of the machine or motor built in the Washburn machine shop by the senior class. All drawing is done under the eye of the instructor.

DEPARTMENT OF MECHANICAL ENGINEERING.

Those who desire to begin the course in mechanical engineering *must enter the apprentice class.*

The course in mechanical engineering, in addition to the studies common to all departments, includes instruction in theoretical and applied mechanics, thermodynamics, steam engineering, engineering laboratory work, and shop practice.

In theoretical mechanics, the principles of statics and dynamics are taught and illustrated in the solution of a wide range of problems, including in statics, the combination of the simple mechanical powers, the determination of center of gravity of surfaces and solids, the effect of friction, the pressure of liquids, and center of pressure of immersed surfaces, and in dynamics, relations of time, space, and velocity in uniformly accelerated motion, the altitude, range, and time of flight of projectiles, the impact or collision of bodies, the constrained motion of bodies, including the pendulum, the moment of inertia of surfaces and solids, the motion of liquids, etc.

In applied mechanics, problems are solved relating to the strength and deflection of beams, pillars, and girders, the bursting strength of boilers, pipes, and thick hollow cylinders, the torsional strength of axles and shafts, the construction of gears, the designing of valve motions, the energy and work of moving bodies, the work of steam in the steam cylinder, the tractive power of the locomotive, the transformation of energy, and many other problems relating to the construction of hydraulic and steam motors and machinery.

The course in thermodynamics includes a study of the principles of the science, the development of the fundamental equations and their applications to heat engines.

In steam engineering, the student is made familiar with the styles and details of steam-engines and steam-boilers in general use, the measurement and computation of power by means of the indicator and planimeter, the analytical and graphical methods of determining the effect of the reciprocating parts of the engine upon the distribution of energy to the crank shaft, the principles regulating the design of crank shaft, fly wheel, governor, valve, and other parts of the steam-engine, the

theory of compound and multiple expansion engines, the effects of clearance and cylinder condensation, and other problems relating to the production and use of steam and the measurement and transmission of power.

Engineering laboratory work includes boiler and engine tests, and other experiments involving the use of steam-engineering appliances, the determination of the strength and elasticity of materials of construction, tests of economy and efficiency of machines, and experiments in hydraulics.

SHOP PRACTICE.

Two principles are observed in the arrangement of the practice in this department: First, that while labor with hand tools and machines should be wisely blended, yet, since machinery has a constantly increasing share in the conversion of material into useful forms, the educated mechanic should know how to design, construct, and assemble the parts of a machine as well as how to make its product; and, second that excellence in construction is to be sought as a most valuable factor in instruction.

The power of the engineer to decide upon general grounds the best form and material for a machine, and to calculate its parts, is greatly increased by blending with it the skill of the craftsman in manipulating the material, and the fact that the product is to be tested and used, kindles interest in its manufacture and furnishes additional incentive to thoroughness and exactness. After the earliest lessons the practice is on commercial goods, and follows the best methods of commercial production.

For this work unusual facilities are offered at the Washburn shop of the polytechnic institute. These shops were founded by the late Hon. Ichabod Washburn, of Worcester. They consist of a three-story central structure, 100 feet long by 40 feet wide, having two extensions each 35 by 40 feet, and two stories high, and a two-story L, 75 by 26 feet.

The building contains engine room, engine and boilers, blacksmith shop, tool room, drafting room, painting and finishing room, and large work rooms for both wood and metals, fully equipped with tools and machinery. Here the students in mechanical engineering spend their practice hours as apprentices, and it is found that the graduates in this department are as skillful mechanics as ordinary apprentices who have served 3 years in a shop, and they have in addition the advantage of a solid education.

To these advantages, viz, the service of construction in the work of instruction, and discipline and culture of free-hand drawing, careful distribution of time, and relief from all unnecessary detail, should be added the consideration which far outweighs them all, that the students come to their work with the perceptive faculties, the reason, the judgment, and the taste all under constant and careful training in school. Theory and practice accompany and supplement each other. Under

these conditions it is clear that the students must, during their practice, have direction and efficient instruction. To provide for this Hon. Ichabod Washburn also gave a fund of \$50,000, the income of which may be applied towards paying the running expenses of the shop, with the expectation that 20 young men would receive its benefits. With the present facilities over 100 are accommodated.

In general the apprentice class are taught the use of wood-working tools and machinery; the junior, middle, and senior classes work mainly on iron.

Practice in the machine shop and drafting rooms is given in manufacturing the products enumerated on the last pages of the catalogue.

DEPARTMENT OF CIVIL ENGINEERING.

The civil engineers join the mechanical engineers in the study of theoretical mechanics.

In applied mechanics they solve problems relating to the stresses and strains in girders, roofs, and trusses, the suspension bridge, stability of the arch, the strength of boilers, pipes, and thick hollow cylinders, deflection and designing of beams, the stability of dams, reservoir walls, and retaining walls, the pressure of earth and stability of earth foundations, the energy of liquids in motion, the construction of water-wheels, and other problems relating to engineering structures.

PRACTICE.

The design of this department is to apply the mathematical training common to all students to the practical work of civil engineering. For this purpose a plane-table and a full equipment of transits, levels, tapes, and the various instruments used by the surveyor and the civil engineer are provided.

At the beginning of the second half of junior year the student in this department begins the study of some approved text-book covering problems in plane and topographical surveying, location, and leveling. During the spring and summer of this year and the fall of middle year, these various problems are applied in the field, all notes being carefully preserved for use in plotting and map drawing.

The second half of the middle year is devoted to the study and applications of problems in railroad engineering. The students make a preliminary survey of about 2 miles of road and then definitely locate the line upon the ground; grade and slope stakes are then set, the number of yards of excavation and embankment are calculated, an estimate of the cost of constructing the road is made, and each student makes a complete map of the line.

In the senior year the practice time is given to a general survey of the field of civil engineering, the study of road-making, limes, cements, and mortars, roof and bridge construction, and kindred subjects.

ELECTRICAL ENGINEERING.

By vote of the trustees in June, 1889, a new department was established with a course of instruction of one year leading to the degree of bachelor of science in electrical engineering.

This course aims to give the student a training, both theoretical and practical, which will serve as a good foundation for professional work.

The time required for the completion of the course is *four and one-half years*, and it includes all the studies, laboratory and shop-work of the mechanical engineering course. (See pp. 324).

At the end of three and one-half years the student who has complied with the requirements of the school may secure the degree of Bachelor of Science in Mechanical Engineering. The remaining year of his course will be wholly devoted to the electrical work, as shown under the detailed course of study. (See p. 327).

Ample accommodations are provided for the department of the Salisbury laboratories.

Three rooms each 63 x 24 feet, and a battery room are used exclusively for electrical work.

A full equipment of instruments and apparatus for the production and measurement of electric currents, including dynamometers and calorimeters, has been provided.

Ample power for dynamos is supplied from a shaft driven by the engines of the mechanical laboratory, and an Otto gas engine is used for special tests.

The magnetic laboratory, situated near the south-east corner of the Institute grounds, is used for experiments requiring a constant field of force, and contains standard measuring instruments, which can be put in circuit with the galvanometers in the Salisbury laboratories.

Terms:

Tuition as in other courses	\$150
Laboratory fee.....	20

DEPARTMENT OF CHEMISTRY.

The course in chemistry is designed not only to prepare the student for actual work as a practical chemist, but also to give him the knowledge of theoretical chemistry, which is absolutely essential to one whose aim is higher than that of a mere analyst.

Therefore, while it is absolutely necessary in technological training that the student should make himself entirely familiar with the analysis of minerals, ores, iron, fuels, oils, gas, water, and foods, it is also equally important that he should have a knowledge of the history and progress of the science, that he should understand the meaning of research work, and by the study of American and foreign journals obtain a knowledge of what is being done by others at the present time in work of like character.

To carry out the above plan, the chemical department has been pro-

vided with well-equipped laboratories. These include a general, an analytical, an organic, an industrial, a sanitary, and a gas laboratory, besides a reference library room, and special rooms for research.

The work in chemistry includes the following subjects :

General chemistry.—Instruction in this subject begins with the first term of the junior year, and is continued during the year. Two lectures are given each week, and include an introduction to general chemistry and a description of the non-metallic elements, and their compounds. A weekly recitation is held, and the students are required to work in the laboratory 2 hours per week for one term.

Analytical chemistry.—Qualitative analysis is taught in the second term of the junior year, by lectures, recitations, and practical work in the laboratory. Ten hours per week, besides 100 hours at the beginning of the summer vacation are required for the work.

Quantitative analysis is taken up at the beginning of the middle year. The subject is taught by aid of lectures, recitations, and practical work in the quantitative laboratory. Ten hours per week during the middle and senior years, besides 60 hours in the spring recess, and 100 hours of the summer vacation are devoted to the subject.

The course consists of gravimetric and volumetric analysis, Fresenius's Quantitative Analysis being used as the text-book. Particular attention is also paid to special work, as analysis of iron, iron ores, slags, oils, fuels, fertilizers, water, beer, and foods. The methods used are based on reports taken from various chemical journals.

Mineralogy.—The work of this subject, to which 4 hours weekly for one term is allotted, embraces all that done in the general course and additional study and testing of rarer minerals.

Gas analysis.—This subject is taught by lectures and laboratory practice in the gas laboratory. The laboratory is supplied with all the modern forms of apparatus for making full and complete analysis of gases.

Industrial chemistry.—During the senior year lectures are given on various technical subjects, such as the production of sulphuric acid, nitric acid, soda ash, etc.

Theoretical chemistry.—A course of 30 lectures is given during the senior year on the theories of modern chemistry. The lectures are based on Lothar Meyer's *Die Modernen Theorien der Chemie*.

Organic chemistry.—Introduction in this department is given by means of four lectures with recitations and six hours' laboratory practice per week during the whole of the senior year. The lectures are based on Laubenheimer's *Organische Chemie*; Smith's translation of Richter's "*Organische Chemie*" is used as a text-book, particular attention, however, being paid to the manufacture of commercial products.

The laboratory work is intended to supplement the topics treated in the lectures. Ample facilities are provided in the organic laboratory

for the preparation and syntheses of carbon compounds, and special rooms are provided for the analysis of organic substances.

The aim throughout is to render the student familiar with the class of work peculiar to the study of organic chemistry and prepare him for subsequent independent investigation.

Sanitary chemistry.—Work in this subject is taken up in the senior year, and particular attention is given to the analysis of air, water, sewage, etc., in the sanitary laboratory. Methods of ventilation, of obtaining pure water supplies, and of disposal of sewage are studied and discussed.

Journal meetings.—The students of the senior class are required to make reports of the principal articles contained in chemical journals. A meeting is held once a week and the reports are read and discussed.

The journals from which reports are taken are: *Annalen der Chemie*; *Berichte der Deutschen Chemischen Gesellschaft*; *Journal of the Chemical Society (London)*; *Zeitschrift für Analytische Chemie*; *Zeitschrift für Angewandte Chemie*; *American Chemical Journal*; *Journal of Analytical Chemistry*; *Journal of the Society for Chemical Industry*; *Comptes Rendus*; and occasionally others.

Thesis work.—Before graduation each student is required to prepare and submit to the faculty a satisfactory thesis on some subject connected with chemistry.

DEPARTMENT OF PHYSICAL AND POLITICAL SCIENCE.

The purpose of this course is to make provision for an increasing class of students who desire a general scientific education, but who do not aim to become chemists or engineers. These look forward to teaching in our high schools, academies, and higher institutions of learning, or to engaging in some branch of commerce or other business enterprises. Such students, it is believed, would prefer to receive their education in that atmosphere of vital contact with realities which characterizes the training which is given at the Worcester Polytechnic Institute. Such a department, while embracing the major part of the studies common to the present departments, is somewhat less restricted in its range of studies, though by no means less exacting and thorough in its requirements, or inferior in its educational discipline. For a part of the higher mathematics and the practice-time in other departments is substituted wider work in natural science,—including in physics an extensive course in general physics, together with laboratory work; in chemistry, in addition to the general course, a thorough laboratory course with lectures in analytical and sanitary chemistry; and in geology and botany special course,—and also a larger amount of study in history, literature and economics than is possible with the technical requirements of the other departments.

BUILDINGS.

Boynton Hall.—Boynton Hall, built by the citizens of Worcester, is a commodious granite building, 146 feet long by 61 feet wide. It contains a chapel capable of seating 400 persons, an office and reception room, a library, a lecture room for geology and mineralogy—in the rear of which are a private laboratory and a storeroom—two large drawing rooms, one for free-hand, the other for mechanical drawing, commodious recitation rooms, and it is expected that rooms for the special work of the department of civil engineering will be refitted in season for use in the autumn of 1889.

Salisbury laboratories.—This building, the recent gift of Stephen Salisbury, esq., was ready for occupancy in September, 1889. It is 145 by 100 feet in extreme dimensions, has four floors available for use, besides subbasement and roof-room, and is specially appropriated to work in mechanical engineering, physics, and chemistry.

The department of mechanical engineering occupies in the basement, which is wholly above ground, two laboratory rooms, each 40 by 40 feet, one for steam engineering—to which the boiler room is adjacent—the other for general testing and for dynamos, and another testing laboratory 40 by 15 feet; and on the first floor drawing and model rooms, each 40 by 40 feet, a lecture room, private study, and reading room.

To the work in physics is devoted, in the basement, an electro-technical laboratory, 63 by 24 feet, a constant temperature room, and a store room; on the first floor, an electrical laboratory for advanced work 63 by 24 feet, a spectrometer room, 30 by 26 feet, and a battery room; and the whole of the second floor, which is intended for class work in physics. Among the more important rooms on this floor are a lecture room 40 by 40 feet, a general laboratory 40 by 40 feet, a laboratory for elementary electrical work 63 by 24 feet, an apparatus room 40 by 15 feet, a photographic room 26 by 16 feet, a photometric room 23 by 12 feet, and a calorimeter room, recitation room, and study. The department of chemistry occupies, in the basement, rooms used for furnace work, gas analysis, acids, and other stores, and the whole of the upper or third floor. Thus there are afforded ample and excellent facilities for the prosecution of all branches of study and research appropriate to this department of technical training.

LIBRARIES.

There is a small library of books of reference at the institute. To this some accessions have been made during the last year. Through the liberality of the directors of the Free Public Library, which contains 85,000 volumes, students share in its use with the citizens of Worcester. All new standard works in technical literature are promptly added to this library as they appear.

The library of the American Antiquarian Society, of 90,000 volumes, is accessible to students who are making special researches.

The library of the Mechanics' Association is accessible to members of that association, and students from the county of Worcester, in the department of mechanics, may become members of the association.

DIVISIONS OF SCHOOL YEAR.

The school year begins on the second Tuesday of September and ends on the second Friday of July.

It is divided into two half years, the first closing with the first semi-annual examination and the second beginning on the last Friday of January.

Recitations and lectures begin the second Tuesday in September and cease with the second semiannual examination.

Summer practice begins on the Monday following the second semi-annual examination, but in the departments of civil engineering and chemistry one week of practice is required in April.

The summer vacation extends from the second Friday in July to the second Tuesday in September. There is a winter vacation of 2 weeks, beginning just before Christmas, and a spring vacation of 2 weeks in April.

EXPENSES.

TUITION.

The charge for tuition is \$150 per year, payable semi-annually in advance, or not later than 10 days from the beginning of each half year's work.

Tuition is free to a limited number of students who at the time of admission to the institute are residents of Worcester County, and who are not over 21 years of age, so far as the income of the funds given to the institute for the purpose of free tuition will allow. Twenty students selected by the board of education, and who are residents of Massachusetts, but not of Worcester County, may also receive free tuition, in accordance with chapter 57, Acts and Resolves for 1869.

Free tuition is also provided, to the extent of the income derived from the gift of Hon. George F. Hoar, for students from that part of Norfolk County, viz, from the towns of Foxboro', Bellingham, Franklin, Medway, Walpole, and Wrentham, which formerly made part of the Ninth Congressional district.

TOTALS.

The entire expenses of tuition, board, and utensils need not exceed \$450 per year. Economical arrangements can be made by which this amount is much reduced.

The number of students in 1890-91 was 200.

DIPLOMAS AND GRADUATION.

Under authority of the legislature the board of trustees confer diplomas with the degree of bachelor of science upon all the members of the senior class who have completed the prescribed course of study, passed satisfactorily the required examinations, and are commended by the faculty as deserving.

The diploma designates the department of the institute to which the graduate belonged.

GRADUATES' AID FUND.

A benevolent friend of the school has given a fund of \$10,000, the interest of which is to be divided annually among the 6 best scholars in the graduating class in the proportion of not more than \$75 each.

BOARD OF INSTRUCTION.

The faculty of the institute consists of 24 professors and assistants, at whose head is Homer T. Fuller, PH.D., president and professor of geology and mineralogy.

SUMMARY.

Number of classes graduated 20
Average age of graduates of last year 21.6 years.

Number of students who have completed a 3-years' course.

Year.	Graduates.	Nongraduates.	On partial course.	Total.	Number of members.	Per cent. of graduates.
1871.....	15	2	1	18	33	45.5
1872.....	16	2	2	20	34	47
1873.....	18		2	20	43	43
1874.....	17			17	45	37.8
1875.....	19			19	45	35.2
1876.....	22	3		25	67	30
1877.....	23	3	1	27	49	47
1878.....	18			18	50	36
1879.....	22			22	52	42
1880.....	16			16	30	53
1881.....	21	1		22	41	51
1882.....	31			31	44	70
1883.....	20	1		21	36	58
1884.....	24	1		25	49	49
1885.....	26	1		27	51	51
1886.....	29			29	51	57
1887.....	29	1		30	50	60
1888.....	35			34	57	60
1889.....	34			34	57	60
1890.....	34			34	57	60
1891.....	30			30	64	47
	499	15	6	520	1,005	50

OCCUPATION OF GRADUATES.

Partners in business firms	64	Teachers	50
Superintendents	60	Chemists	24
Chief engineers	5	Electrical work	23
Division engineers	5	Advanced students	20
Assistant engineers	32	Designers	5
Civil engineers	30	Others	50
Draughtsmen	75		
Mechanical engineers	16		455
Master mechanics	4	Deceased	23
Machinists	6		
Foremen	8		406

More than 90 per cent. of the graduates are engaged in occupations for which their training at the Institute specially prepared them.

CHAPTER XV.

BOSTON UNIVERSITY.¹

Boston University was chartered by act of the legislature in the year 1869. The three gentlemen named in the charter as the original corporators were Isaac Rich, esq., the Hon. Lee Claflin, and the Hon. Jacob Sleeper, all of whom had held responsible positions in the government of one or more of the older New England colleges, and the last of whom had served as a State-appointed overseer of Harvard University for a period of 12 years. The governor of the Commonwealth, who officially approved and signed the act of incorporation, was a son of the second of the original corporators.

PLAN OF ORGANIZATION.

The name and location of the new institution predetermined in important respects its character. Established in the heart of the metropolis, with one-third of the population of New England within easy reach of its halls, it could meet the expectation of the Commonwealth that chartered it in no other way than by becoming a metropolitan university of the most advanced and comprehensive type. Fortunately its far-seeing and public-spirited founders were more desirous than even the public that the great opportunity should not be lost. Accordingly, after a careful study of all existing types of university organization and an equally serious study of the local and historic conditions, they adopted a plan of organization differing in some respects from any before exemplified in their Commonwealth, or indeed in Christendom. Alluding to its peculiarities, the president in one of his reports has said:

A few simple diagrams will perhaps facilitate an understanding of them. Fig. A may represent a typical German university. The four equal divisions produced by

FIG. A.

3				
2				
1				

¹Prepared from official documents and authorized.

the perpendicular lines represent the four faculties of theology, law, medicine, and philosophy, which last covers all university instruction not included in the three others. The three divisions produced by the dotted lines represent the three years customarily spent by students on an average in passing up through the instruction of the different faculties.

Fig. B represents the typical English university as exhibited in the Oxford and Cambridge groups of coördinate colleges as they existed before the reforms of the last

FIG. B.

4							
3							
2							
1							

few years. Here the divisions produced by the perpendicular lines represent different colleges of the liberal arts, of which each of the universities has more than a score. The year divisions are here four, representing 4 years of undergraduate training.

It seemed to the organizers of Boston University that a combination of these two types would give a new one quite superior to either, and one well protected against most of the evils from which the best American universities were already suffering. This new type would be represented by Fig. C.

FIG. C.

	THE CONVOCATION.							
	S. T. B.		LL. B.		M. B., M. D.		Ph. D., etc.	
7								
6								
5	A. B.	A. B.	A. B.	Ph. B.	A. B.	S. B.	A. B. Mus. B.	
4								
3								
2								
1								

In this scheme there would be room in the lower or undergraduate range of work to establish any number of coördinate colleges of the liberal arts, all under the general charter of the university. This form of organization would naturally prevent the evils which manifest themselves whenever an undivided undergraduate department of a university becomes so overgrown that its professors cannot know their students and the students cannot know each other. At the same time it would

allow the university to affiliate or to found colleges in places at some distance from its own headquarters and so to unify wisely distributed educational forces. Furthermore, it would enable it without friction to present in separate colleges appropriately diversified courses of training which the student could choose according to his individual plans of life. Besides the ordinary liberal-arts colleges, others could be organized to afford the training appropriate to a roundly educated musician, or agriculturist, or engineer, etc. Thus by a simple differentiation of its undergraduate work into distinct colleges the new university believed it possible, first, to guard against those evils of overgrowth inseparable from a single college; second, to distribute collegiate advantages over a wider area without loss of that union in which is strength; third, to unify by affiliation already existing institutions of collegiate grade, at the same time strengthening them by incorporating into a metropolitan university organization; and fourth, to give to students with differing vocational prospects and purposes a better combination of liberal and technical training for such vocations than could possibly be afforded either by one college of unlimited size or by technological schools independent of university associations and influences.

With respect to the post-graduate departments of the university in this scheme we again quote from President Warren:

The statutes of the university provide that all departments so organized as to presuppose on the part of the student a collegiate preparation or its equivalent shall be called schools. Here are found, first of all, the school of theology, the school of law, and the school of medicine. Next to them, and partly including them, stands the broad department of general post-graduate study, called the School of All Sciences. This crowns and unifies the entire organization of the university. Crowns it, because the student can reach this school only by passing up through one or more of the departments below; unifies it, because its faculty consists of the university senate, that is to say, of the regular professors in all the colleges and schools of the entire university. Its intended ultimate comprehensiveness is well indicated by its name.

With such a diversification and coördination of all desirable forms of undergraduate work, combined with the described diversification and interordination of post-graduate instruction, professional and other, the university presented to the world a type of university organization structurally symmetrical at the start, yet capable of greater progressive comprehensiveness in perfect unity than any that had ever before been seen. As such it has been studied with great attention by all organizers of the new American universities, and even by the professional educators of the Old World.

HIGHER EDUCATION OFFERED TO WOMEN.

In another respect the institution holds a unique place in the history of education in Massachusetts. It was the first to afford the young women of the Commonwealth the advantages of the higher education. Its college of liberal arts antedated Wellesley and Smith and the Harvard Annex. Its doors, furthermore, were not reluctantly opened in consequence of the pressure of an outside public opinion too great to be resisted. On the contrary, it was in advance of public sentiment on this line and directed it. Its school of theology was the earliest anywhere to present to women all the privileges provided for men. In fact, this university was the first in history to present to women students unrestricted opportunities to fit themselves for each of the learned professions. It was the first ever organized from foundation to cap-

stone without discrimination on the ground of sex. Its officers had much to do with the successful agitation which led to the establishment by the city of Boston of the Latin School for Girls. Its publications bearing upon the joint education of the sexes have been sought in all countries where the question of opening the older universities to women has been under discussion. Interesting facts from its experience were presented by the president in many of his annual reports, notably the ninth. The paper entitled "Joint and Disjoint Education in the Public Schools," and published in the University Year Book, vol. VI, had also in various editions a wide reading and profound effect.

ORIGIN AND AIMS OF THE SCHOOL OF THEOLOGY.

The first pecuniary means of the new corporation were derived from a preëxisting institution. In the year 1871 the trustees of the Boston Theological Seminary, having obtained an enabling act from the legislature, transferred and legally conveyed to the trustees of the university, upon certain accepted conditions, the school maintained by them, together with all the property and trusts belonging thereto. This gave the university, as its first department, the largest theological school in New England, and one of the largest in the country. The property transferred amounted to a little less than \$250,000. Ninety-four students were in attendance at the time, and the former graduates of the seminary, 235 in number, were adopted by the university as alumni. In this way it came to pass that the first department of the university is in possession of a history which goes back to 1839, while the university itself dates back no farther than 1869. The department is also interesting as being the oldest ministerial training school of the Methodist Episcopal Church. Its real founder, Rev. John Dempster, D. D., was the son of a Scotch minister, who was a graduate of Edinburgh University, and its history from 1839 to 1872 is given at some length in the Annual Report of the School of Theology of Boston University for the year 1871-72.

Viewed with respect to the progress of theological education in America, several facts deserve mention in this place. This school was the first to relegate to a "second division" all students whose academic degrees were inferior to a solid A. B. based upon a full classical course, or were lacking altogether, and to limit the degree of bachelor of sacred theology to students successfully completing the full 3-years' curriculum of the school in the "first division." Unlike many similar schools, moreover, it has never given its degree or even a certificate of graduation to a candidate who had not completed the regular 3-years' course in Hebrew. It was the first in the country to offer instruction in Samaritan and Talmudic Hebrew. It is believed to have been the first to make the historic, systematic, and philosophic study of the religious and religious phenomena of all ages and peoples an integral and permanent part of its curriculum. It makes a like claim with respect to the

systematic and comprehensive study of Christian missions. It was the first to organize a graduate chapter with monthly and other meetings, a printed organ for the publication of transactions, and a projected method of promotion to the doctorate in sacred theology on the basis of tested productive scholarship in this department of learning. It has never bestowed an honorary degree. Among its instructors have been as lecturers eminent representatives of many communions. In the emancipation of American theological instruction from the narrowness of that traditional form in which it was, and to a great extent still is, limited to professors representing a single denomination only, this school was one of the first and most effective pioneers.

SCHOOL OF LAW.

The University School of Law was opened in October, 1872. The Hon. Edmund H. Bennett, LL. D., was invited to the deanship, but owing to temporary ill-health could not accept. The choice then fell upon the brilliant George Stillman Hillard, LL. D., and a fortunate one it was. Mr. Hillard was singularly favored alike in personal gifts and in his associations. Among his schoolmates were many who afterwards achieved renown. Yet both in the Boston Latin School and in Harvard College he carried away with ease the highest honors. He had as a college classmate, Robert C. Winthrop; as a colleague in teaching, George Bancroft; as a law partner, Charles Sumner; as intimate and life-long friends and associates, George Ticknor, Daniel Webster, Rufus Choate, Edward Everett, Henry W. Longfellow, Oliver Wendell Holmes, and all that galaxy of scholars, orators, and poets which made the middle of this century a kind of golden age in American letters. In elegant scholarship, in appreciation of art, in oratorical finish, in brilliancy of conversational powers he was at the least the peer of any of this rare company. Of one of his orations Mr. Sumner said: "This production has placed its author among the most prominent minds in the country." Mr. Pierce, the genial biographer of Sumner, in his eulogy before the bar stated that, "all things considered, Mr. Hillard was the best converser this community ever enjoyed." Longfellow said of him that "he was absolutely unrivaled in fluency of speech, in beauty of diction, in suggestiveness of thought, and as to his power of memory." The last great work of his life was his part in the organization and early administration of the school of law. During the 2 years that the school was under his wise care it gained a position and character which insured its remarkable subsequent growth. His relations with the other members of the university council and with the law faculty were of the most cordial character, while his personal interest in the individual students won for him an affectionate esteem as universal as it was deserved.

The school was opened at 18 Beacon street, in a building now displaced by the stately Clafin building. The lecturers whom the trustees secured for it constituted a group of singular eminence and ability.

Among them were the Hon. Henry W. Paine, Dr. Francis Wharton, Judge Benjamin R. Curtis, Judge Edmund H. Bennett, N. St. John Green, esq., Judge Benjamin F. Thomas, Judge Dwight Foster, Hon. Charles Theodore Russell, Judge Otis P. Lord, Melville M. Bigelow, esq., Hon. Edward L. Pierce, and Hon. William B. Lawrence.

At the time of the chartering of Boston University the condition of the existing American schools of law was far from creditable. The Harvard University school probably enjoyed a higher reputation than any of the others, yet in it the entire instruction was given by three persons. Instead of offering a fixed course, graded throughout according to the rational sequence of subjects, the authorities admitted students at any time, and claimed that those who were beginning the study of the law could enter at the commencement of either term of the year "upon branches suitable for them." Moreover, as President Eliot has repeatedly stated in his reports, there was at that time in the Harvard school no examinations whatever. Students were admitted, promoted, and graduated without ever being called on to pass a single test beyond that of paying the fees. The entire course covered but two abbreviated scholastic years. In the other schools in different parts of the country the instruction offered was inferior in quality to that given in Cambridge, and generally less in quantity. In many of them attendance upon lectures 6 months and a prompt payment of fees secured the only honors they could give.

The projectors of Boston University believed it to be time for an advanced movement. They therefore at the outset adopted statutes of organization providing for a course of instruction scientifically graded and extending through 3 scholastic years. A few years later this good example was followed at Cambridge, and at present two or three other schools are adjusted or are about to adjust themselves to it.

During the school year 1874-75, in consequence of Mr. Hillard's failing health, Mr. St. John Green was made acting dean, but upon the death of the latter in the summer of 1876, Judge Edmund H. Bennett was again called to the deanship, which position he has honorably and efficiently filled from that date to the present time. The steady growth of the school is well shown in the following totals of its students for the first 6 years: 65, 81, 131, 141, 148, 173.¹

SCHOOL OF MEDICINE.

This school was opened in the fall of 1873. Between 70 and 80 students passed successful entrance examinations, were matriculated, and assigned according to their advancement to the various classes. A few months earlier the trustees of the New England Female Medical College, the oldest of its kind in the world, embarrassed in their financial re-

¹ A valuable sketch of the history of the school illustrated with photo-engravings, is given by George R. Swasey, esq., in *The Green Bag* for February, 1889, pp. 54-65.

sources, and convinced that the school projected by the university could do for the medical education of women far more than the college, leased their building to the university trustees, and at length, with authority from the legislature, united their school with the one just organizing. The result abundantly justified their course. Successive enlargements and improvements have been made in the buildings, the elegant new homœopathic hospital has risen on adjoining land, and instruction far superior to what the preceding institution could offer has been provided and maintained. The dean of the new faculty from the beginning has been I. Tisdale Talbot, M. D., to whose energy and tact the school is greatly indebted for its growth and prosperity.

In this department, also, the university was able to make a decidedly important contribution to the improvement of professional education in America.¹ It set before itself the highest practicable aims. For several years it has published in its circulars the following honorable and certainly remarkable claims and as yet no party or institution has challenged their correctness:

This school was the first in America to present in combination the following essential elements of a thorough reform in medical education:

First. The requirement that the candidate for admission either present a college diploma or pass a prescribed entrance examination.

Second. The provision of a carefully graded minimum course of instruction covering 3 full scholastic years.

Third. The provision of a '4 years' course for those who wish to pursue their studies with special thoroughness and with suitable leisure for collateral reading and to obtain professional experience under direction of the faculty.

Fourth. The requirement that every student pass a successful examination upon the work of each year before promotion to that of the next.

Fifth. The requirement, as a condition of graduation, not merely that the candidate shall have studied medicine at least 3 full years, but also that he shall have attended a reputable medical school not less than 3 years.

Sixth. The restoration of the degrees of bachelor of medicine and bachelor of surgery, to be attained at the end of the third year by those who take a 4 years' course.

Seventh. A provision for visiting and examining boards independent of the teaching faculty.

Eighth. The repudiation of all sex disabilities either in teaching or learning.

The marvellous advance which medical education has made in our country during recent years is well illustrated by a comparison of the time, study, and acquirements essential 20 years ago to secure medical degrees and those which are required to-day. In 1870 "there was not a medical school in the United States which held regular entrance examinations, even in form. But one, the Medical College of Chicago, presented a graded course of instruction. In a large number of these institutions the candidate could take his degree of doctor of medicine *after attendance a single term of 15 or 20 weeks*. In some, where attendance two terms was required, the instruction of the first was simply repeated, and both terms thus brought within the limits of a single year, or even less.

¹ The thoroughness with which the methods and movements in medical education in all parts of the world were studied is shown in President Warren's paper entitled "Hopeful Symptoms in Medical Education" published in the Boston University Year Book for 1880.

"To-day, in the Boston University, candidates who have taken their first degree in arts, philosophy, or science are admitted without examination on exhibition of their diplomas to the board of examiners. All others, before matriculation, are examined in the following branches:

"(1) Orthography, English composition, and penmanship, by means of a page written at the time and place of examination.

"(2) Arithmetic, geography, and English grammar, if there be doubt whether the candidate has sufficient attainment therein.

"(3) Elementary physics, on so much as is found in Stewart's Primer of Physics.

"(4) Latin, a translation from Harkness's Latin Reader at sight being required, and a knowledge of declensions, conjugations, syntax, etc."

Two courses of study are offered:

A 3-years' course.

First year.	Second year.	Third year.
Anatomy. Physiology. General chemistry. Minor surgery. Microscopy. Histology. Methodology. Dissections.	Medical chemistry. Surgery and surgical pathology. General pathology and pathological anatomy. Special pathology and therapeutics. Materia medica and pharmacutics. Obstetrics. Gynecology. Pedology. Diseases of the chest. Diseases of the throat. Sanitary science.	Operative surgery. General pathology and pathologic anatomy. Special pathology and therapeutics. Materia medica. Practical and operative obstetrics. Ophthalmology, otology. Dermatology. Insanity and nervous diseases. Medical jurisprudence. Ethics and aesthetics. Clinics and clinical reports in various departments. Thesis.

A 4-years' course.

First year.	Second year.	Third year.	Fourth year.
Anatomy. Physiology. General chemistry. Minor surgery. Microscopy. Histology. Methodology. Dissections.	Medical chemistry. Surgical anatomy. Special dissections. Histology and microscopy. Surgery and surgical pathology. General pathology and pathological anatomy. Special pathology and therapeutics. Materia medica. Pharmacutics. Obstetrics. Sanitary science. Diseases of chest. Diseases of throat.	Operative surgery. Practical and operative obstetrics. Materia medica. Special pathology and therapeutics. General pathology and pathological anatomy. Pedology. Gynecology. Clinics.	Materia medica, continued. Ophthalmology. Otology. Dermatology. Insanity and nervous diseases. Medical jurisprudence. Ethics and aesthetics. Dispensary practice. Clinics and clinical reports in various departments. Thesis.

"Candidates for the degree of bachelor of medicine or bachelor of surgery must have studied medicine 3 full years, the last of the three in this school, and must have passed examinations in all the branches of the first 3 years of the 4 years' course in this school with a minimum average of 80 per cent.

"Candidates for the degree of doctor of medicine must be 21 years old, and of good moral character.

"Such as have not pursued one of the prescribed courses of this school, and passed its regular examinations, must present evidence of having studied medicine during 3 years with competent instruction; of having attended at least three full and reputable courses of lectures, the last in this school, and must pass an examination satisfactory to the faculty,"—(B. U. Year Book, 1889.)

POPULARITY OF ITS PROFESSIONAL SCHOOLS.

Such radical improvements in American provisions for theological, legal, and medical training attracted universal attention. As a consequence, the newly established professional schools were at once crowded with students. In the numbers in attendance the young university almost immediately outranked the only two others which at that time maintained the same three faculties, to wit, Harvard and Yale. The aggregate of professional students in connection with these three universities for the 4 years below named were as here shown:

Year.	Yale.	Harvard.	Boston.
1874-75	206	351	352
1875-76	217	372	414
1876-77	191	436	440
1877-78	193	422	425
Total	807	1,581	1,631

Already, in the third annual report of the president, the attention of the trustees is called to the seriousness of the responsibilities of such a growth. Several pages of comparative statistics are furnished, at the conclusion of which the following summary is given:

It is thus statistically shown:

I. That last year the number of professional students in Boston University was 42 more than in Harvard, and 197 more than in Yale.

II. That, counting all departments, the number of tributary collegiate and professional institutions was the same as in Harvard, and 5 more than in Yale.

III. That, counting the entire membership of the university, its percentage of graduate students was 6 higher than Harvard's and 9 higher than Yale's.

IV. That, counting out the academic element, and comparing the remaining departments common to the three, Boston's percentage of graduate students was but two below Yale's, while it was two more than double the percentage of Harvard.

These are most sobering facts. They are here presented, not in any spirit of vain-glory or even of gratulation, but because of the impressiveness of their moral. Being facts, they ought to be known to every trustee and patron of the university. They should be pondered by each until a profound sense of the immense responsibilities devolved upon the university is realized. In the highest forms and ranges of American education a place has been given to this young institution such as has been vouchsafed to no other. For good or for evil, it is to train a high percentage of the learned of the nation. Its standards will powerfully affect the standards of all grades of American schools. The quality of its work will tell upon culture, upon morals and piety, upon civilization and progress from ocean to ocean. Without an ever-increasing vigilance, and greatly increased pecuniary resources, the custodians of the institution will forfeit unprecedented opportunities.

COLLEGE OF LIBERAL ARTS.

Passing now from professional to collegiate or undergraduate departments, the College of Liberal Arts is the first to claim attention. So central is the place held by the liberal arts in every university that many institutions which include nothing else are chartered and administered

under the name of universities. Indeed, until recently the universities of Oxford and Cambridge consisted of little else than groups of coördinate colleges of liberal arts under a general administration. In Boston University but one such college has as yet been organized, but the organic law of the university provides for any number which circumstances and pecuniary ability may prompt. The present one was opened with a single class at 18 and 20 Beacon street, in the autumn of 1873. Its first dean was the Rev. John W. Lindsay, S.T.D., formerly president of Genesee College, New York, later professor of Old Testament studies in the Boston Theological Seminary. On his resignation of the office in the year 1882 it was filled by the appointment of Rev. William E. Huntington, PH. D., who has held the place until the present time.

Of the applicants for admission in 1873, the average age was 20.5 years; in 1874 it was 20.1; in 1875 it was 19.48; in 1876 it was 19.85. Taking the first four classes, therefore, it appears that at the time of admission the average age was 19.98, or substantially 20 years. This was more than a year and a half higher than the average age of students entering Harvard College the corresponding years, and almost two and a half years higher than the average in the same institution 20 years earlier. The fact is of interest as showing the relative maturity of the first undergraduates of the new university and the propriety of the large confidence which the authorities have uniformly cherished in their capacity for self-control.

No sooner had the college its full complement of classes than the authorities began to raise the standard of requirements for admission with a view to restrict the attendance and to improve the quality of the work accomplished. This policy was due partly to the fact that the college was fast outgrowing its accommodations, partly to a conviction that American collegiate education needed the stimulus and inspiration of a few higher examples than the highest then existing. Accordingly the fourth volume of the University Year Book announced such new requirements as represented at the least a full year's work beyond the average requirement of the other American classical colleges. The additions were distributed over five years, and the privilege of dividing the total entrance examination was granted. For the first time in history a knowledge of four languages besides the student's vernacular was required for admission to a college of liberal arts. Still further to limit the numbers applying, the 3-years' course leading to the degree of bachelor of philosophy was discontinued; the tuition fee was raised from \$60 to \$100; and finally, the practice of remitting the tuition fee in whole or in part in certain known cases of poverty and merit was abandoned. Probably the history of the colleges of the country would be searched in vain for a case of self-restriction so radical and severe.

What was the result? A singular stability in the membership of the college. The total annual attendance for the 5 years following the announcement is shown in the following figures: 105, 107, 126, 127, 107,

the average being a fraction over 114. The variation was caused almost wholly by the varying number of graduate students in attendance. The aggregates of candidates for the degree of bachelor of arts were: 89, 88, 89, 90, 82. It is certainly wonderful that any college, particularly one so young and so provisionally housed and equipped, could have maintained itself even for a quadrennium against the combined influences of four repressive measures of such severity simultaneously enacted.

The following year, 1881-82, was marked by special advances. The faculty was enlarged, the new quarters on Somerset street were obtained, and 64 free scholarships in memory of Isaac Rich established. About the same time the colleges and secondary schools of New England having requested the earnest coöperation of all interested parties in the establishment of uniform requirements for admission to college, the College of Liberal Arts reduced its standard to that agreed upon by the representatives of the other institutions. Great enlargement followed. The present attendance lacks but little of being three times as great as that of the year just mentioned.

No sketch of this college would be reasonably complete without mention of the eminent service it has rendered to the profounder philosophical studies in a time of shallow and confused empiricism, and to the cause of broad and solid education in a time of narrowing but ably-championed popular hallucinations respecting "special" undergraduate studies. Its stout and uncompromising opposition to all educational quackery, however labeled, its resolute maintenance of classical and philosophical studies in full honor, its fearless leadership in new departments and methods have given it a wide and beneficent influence in the educational world.

The following is taken from the University Year Book for 1889:

COURSE OF INSTRUCTION.

For the degree of bachelor of arts.

The course of instruction will include the following branches, or their equivalents:

FRESHMAN YEAR.

First term:

Collegiate life and work. Lectures.
Livy. Prose composition. Lectures.
Xenophon, Memorabilia. Greek writing. Lectures.
Solid geometry.

Second term:

Horace, Odes. Lectures.
Homer, Odyssey. Greek writing.
Algebra.
History, Greek and Roman.
Practical rhetoric.

Third term.

Horace, Epodes. Lectures.
Herodotus.
Plane trigonometry.
German. Elementary work. Deutsches Echo.
History, Greek and Roman.
Practical rhetoric.

SOPHOMORE YEAR.

First term:

Demosthenes, or Lysias.
German. Reading and exercises.
History, mediæval.
Horace, Satires and Epistles.
Rhetoric, advanced, and criticism.
Spherical trigonometry.
Vocal and forensic training.

Second term:

English prose (Minto).
French. Keetel. La Fontaine. Töpffer.
Physics. Lectures.
Vocal and forensic training.

Elective:

German. Readings. Free composition.
Greek.
History, mediæval and modern.
Juvenal. Cicero (*at sight*).
Physics—laboratory.

Third term:

English. Representative poets.

Physics. Lectures.

Vocal and forensic training.

Elective:

Biology. Botanical introduction.

French. Labiche and conversation.

German. Story. Free composition.

Greek.

History, modern.

Physics—laboratory.

Surveying.

Tacitus, Germania and Agricola, or histories.

English essays one hour a week throughout the year.

JUNIOR YEAR.

First term:

Psychology.

Vocal and forensic training.

Elective:

Analytical geometry.

Biology. Lectures. Laboratory.

English. Literary art. Poetry.

French. Blouet. Rougemont. Molière.

German. Readings. Free composition.

Greek.

Italian. Grammar and readings.

Latin.

Second term:

Logic.

Vocal and forensic training.

Elective:

Anglo-Saxon. Grammar. Prose reading.

Calculus, differential.

English prose fiction.

French. Blouet. Rougemont. Racine.

Geology.

German dramas. Stein's exercises.

Greek.

Italian, with easy conversation.

Latin.

Zoölogy.

Third term:

Ethics.

Vocal and forensic training.

Elective:

Anglo-Saxon poetry. Caedmon.

Calculus, integral.

Chemistry.

English novelists nineteenth century.¹

French. Authors and conversation.

German literature, history of.

Greek.

Italian, with easy conversation.

Latin.

Physiology.

Roman law. Rise of institutions.

SENIOR YEAR.

First term:

Orations and theses.

Philosophy of Theism.

Elective:

Beowulf. Early English.

Constitution of the United States.

English. The Elizabethan drama.

French. Recent authors.

German. Goethe and Schiller.

Greek.

Hebrew.

Italian. Dante and his Age.

Latin.

Philosophy of ethics.

Sanskrit.

Spanish. Grammar and readings.

Theory of equations, or determinants.

Second term:

Essays and orations.

Evidences of Christianity.

Elective:

Anglo-Saxon.

Astronomy.

English Shakspeare.²

French. Advanced course.

German. Living writers. Themes.

Greek.

Hebrew.

Italian. Dante and art.

Latin.

Metaphysics.

Political economy.

Sanskrit.

Spanish. Readings. Conversation.

Theory of equations.

Third term.

Graduation theses.

Elective:

Anglo-Saxon. Early English pronunciation.

Astronomy.

English poets. Nineteenth century.

French.

German. Older literature. Themes.

Greek.

Hebrew.

History of philosophy.

Italian. Dante and literature.

Latin.

Roman law. Rise of institutions.

Sanskrit.

Social science and reform.

Spanish. Readings. Conversation.

Theory of knowledge.

The instruction in a number of the above branches is supplemented by lectures, some of which are delivered before single classes, others before the entire college.

¹ Continuation of winter term course.

² Continuation of the fall term course.

ELECTIVE COURSES.

I.—*For candidates for the degree of bachelor of philosophy.*

A limited number of persons unable to take the full course in arts, but desiring to fit themselves for the professional schools of the university, or for other liberal pursuits, may for the present be admitted to the college as candidates for the degree of bachelor of philosophy on passing a satisfactory examination in what the faculty may esteem equivalent to three-fourths of the requisites for admission to the freshman class. On satisfactorily completing an elective course of study approved by the faculty, an equivalent to 10 hours a week for 4 years, such candidates may be promoted to the degree of bachelor of philosophy.

II.—*For candidates for the degree of bachelor of arts desiring to pursue the course in an elective order.*

To accommodate an increasing number of mature students who desire to pursue the studies required for the degree of bachelor of arts with greater thoroughness or in a different order, or with greater leisure for reading or laboratory work than the regular 4-years' course will permit, the further announcement is made that hereafter any student passing the examinations required for admission to the freshman class may matriculate as a candidate for the degree of bachelor of arts, with liberty to take the studies required for the degree in any order he prefers, subject to the approval of the faculty.

III.—*For special students.*

A limited number of special students, in addition to those connected with other departments, may, until further notice, be admitted to instruction in the College of Liberal Arts. All such must be of mature age and qualified to pursue the study or studies which they desire to undertake. The charge for tuition will be \$30 for 2 hours' instruction per week for the year as a minimum, and \$15 extra for each additional hour per week, until the charge amounts to the regular fee of \$100. The fee for incidentals is \$10 a year, or \$5 a term.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

The sophomore class receive their instruction in physics, the junior and senior classes their instruction in chemistry, in the laboratories and lecture rooms of the Massachusetts Institute of Technology. The instruction is expressly arranged for the class, and is illustrated by the very extensive collections and admirable apparatus of the institution.

THE BOSTON SOCIETY OF NATURAL HISTORY.

The junior and senior classes receive their instruction in botany, biology, zoölogy, and physiology in the laboratory of the Boston Society of Natural History.

LIBRARIES, READING ROOMS, COLLECTIONS, ETC.

Students in the College of Liberal Arts enjoy, without charge, the use of the department libraries of the college, as also the public library of the city of Boston, a collection outnumbering every other of its kind in America. The extensive reading room of the same institution is open to all.

To the college libraries more than 5,000 volumes have been added the present year.

Other special libraries and reading rooms are accessible on the payment of small annual fees.

Among the museums and collections open to students, without charge, may be mentioned—

The Museum of the Boston Society of Natural History.

The Way Collection of Egyptian Antiquities.

The Art Collections of the Public Library.

The Museum of Fine Arts,

The other advantages afforded by the city in the form of lectures, conventions of scientific men, art exhibitions, etc., are too well known to need description.

COLLEGE EXERCISES.

Regular morning devotions are conducted by members of the faculty, at which all students are expected to be present.

All regular students are required to attend from fifteen to seventeen recitations, or other class exercises, per week. They will be held responsible for examinations upon all studies elected. No exemption is allowed, except by vote of the faculty, on account of an excess over 15 hours a week.

Any student prevented from attending upon a class exercise must present to the appropriate professor a written excuse from the dean.

On the first day of the fall term every student entitled to elect studies for the year ensuing must present to the dean a list of those he desires to pursue. In all cases the selection must be subject to the approval of the faculty, and one that can be arranged for without conflict of hours. After such approval no changes will be allowed without special consent of the faculty.

Special examinations will be held on the third and fourth Fridays of October, January, and April. In each case, upon the first Friday named, the topics will be in history, Latin, and Greek; all remaining topics upon the following Friday.

After two opportunities have been offered for reëxamination upon deficiencies, students still having conditions will be required to review the deficient work with the succeeding class as a regular recitation. Deficiencies of more than 1 year's standing will work a forfeiture of class membership, and cause the name of the delinquent to be printed with those of the next lower class, in the year book, due notice having been given.

The exercises of the college are arranged at such hours that students living in any of the neighboring cities or towns on railroad lines may conveniently attend. In most cases such students pay but half-fare.

SOCIETIES, CLUBS, ETC.

Flourishing literary and debating societies, language clubs, seminaria of philology, philosophy, etc., are maintained by the professors and students.

GYMNASIA.

Two large rooms are set apart and furnished as gymnasias, and every student has opportunity for physical exercise daily without charge.

Young men desiring to take regular instruction and exercise at the gymnasium of the Young Men's Christian Association are encouraged to do so; the college paying more than one-half of the necessary fee.

EXPENSES.

The only annual fees required from regular students in the College of Liberal Arts are:—

For tuition.....	\$100
Incidental expenses.....	10

These are payable in advance, one-half at the beginning of the first term, and the remainder at the beginning of the second.

The tuition fees of special students, if less than \$100, are payable by the term in advance. The fee for incidentals, if paid for the year in advance, will be \$10; otherwise, \$5 per term in advance.

Candidates for final examination and promotion to the bachelor's degree are required to pay a fee of \$10 to the registrar on or before the first day of the final examination.

Board can be obtained in approved boarding houses or families at prices varying from \$3 to \$5 a week.

Furnished rooms, conveniently located, and properly taken care of, can be obtained for from \$2 to \$5 a week. If two students room together, the average expense will be about \$2 each. For the convenience of new students desiring rooms, a list of references is kept at the office of the registrar of the university.

When desired, a committee of the Massachusetts Society for the University Education of Women will advise and assist young women in the securing of suitable rooms or board-places, and otherwise.

The chief annual expenses of a student not residing at home will be about as follows:

For tuition.....	\$100
Fee for incidentals	\$10
Room	36 to 90
Board, 36 weeks.....	108 to 180
Text-books, stationery, etc.....	20 to 25

Other expenditures will depend very much upon the habits of the student.

Students who are able to live at home can secure their entire college course of 4 years for \$500.

SCHOLARSHIPS.

One hundred and seven free scholarships for needy and deserving students have been established in the college. They are as follows:

The Warren Scholarship.—Founded 1882. Income \$100 a year.

The Rich Scholarships for Young Men.—Founded 1882. Of these there are 32, or 8 for each of the 4 classes. Each yields an income of \$100 a year.

The Rich Scholarships for Young Women.—Founded 1882. Of these there are 32, or 8 for each of the 4 classes. Each yields an income of \$100 a year. The Rich Scholarships are named in honor of Isaac Rich, esq., first founder of the university.

The Washington Scholarship.—Founded 1883. Income \$100 a year. Open only to duly qualified graduates of the Washington (District of Columbia) High School. "The first to enjoy it must be a young man, the second a young woman, and so on in regular alternation. Whenever, after it is once filled, a vacancy occurs, it will be filled by competitive examination."

The Woodvine Scholarship.—Founded in 1886, by gift of Denton G. Woodvine, M. D., of Boston. Income, \$100 a year.

The University Scholarships.—Established in 1887; forty in number, of which twenty are already available. Income, \$100 each.

Appointments to the scholarships are made at the beginning of the year, and all applications should be in the hands of the dean on or before the 10th day of October.

OTHER PECUNIARY AID.

The Massachusetts Society for the University Education of Women has, during the past year, assisted a number of young women in the college.

Students preparing for the Christian ministry can usually receive aid from education societies of their respective denominations, amounting to \$100 or more per annum.

PROMOTION.

The first degree.

The requirements for the degree of bachelor of arts or bachelor of philosophy are—

- (1) A satisfactory completion of the required studies, prescribed or elective.
- (2) The presentation of a satisfactory graduating thesis on or before the second Wednesday in May.
- (3) The payment of an examination fee of \$10 before the final examination.

All promotions to degrees are at the same time promotions to the privilege of permanent membership in the University Convocation.

The higher degrees.

All students promoted to the degree of bachelor of arts in this college are *eo facto*, and without the payment of the matriculation fee, entitled to admission to the School of All Sciences as candidates for the degree of master of arts. If, then, any bachelor so admitted shall, during the first year after his promotion, pay to the university an examination fee of \$10, he shall be entitled to examination at the time, or later, in whatever work may be required for the master's degree, and may be promoted to that degree on payment of \$10 additional.

COLLEGE OF MUSIC.

Naturally related to the College of Liberal Arts is the College of Music. This was intended to present opportunities for musical and general education of a higher and broader character than had ever before existed in America. Its instruction was planned with reference to the needs of graduates of the best American conservatories. Dr. Eben Tourjée was chosen dean of the college, and with him was associated a large number of most able instructors. Unfortunately for the expectations of those who anticipated its speedy endowment by friends of the cause, its opening was on the eve of the great financial crash of 1872. Eight years later, in his annual report, the president wrote:

Could the trustees have foreseen at that time the financial history of the 8 years which have since elapsed, they would certainly have deferred the undertaking. As it was, they hoped to see the college by this time well endowed and well equipped. In the same generous faith a few friends of the movement, including two or three members of this board, subscribed a guaranty fund, and the dean elect having pledged himself to carry the whole financial responsibility of the new department, and later having given bonds to secure the university against any possibility of loss, the board of trustees, on the 3d of July, 1872, formally assented to and arranged for the opening of the college. In October the corporation had the pleasure of accepting as a first gift for its benefit a cottage on Cottage avenue, Martha's Vineyard. This was an auspicious beginning of the anticipated endowment, but unfortunately, less than a month later came the great conflagration, and close upon that the memorable financial disasters from which the country is even now but just beginning to rally. The very life of the college was threatened. Of the subscribers to its guaranty fund, some found it extremely difficult, some perhaps impossible, to pay. The energy, skill, and perseverance manifested by the dean in carrying the enterprise through so long and disheartening a crisis deserve admiration.

Six years later the same writer says:

In one view the establishment of the College of Music might appear to have been premature. Its high standard of requirement for admission, promotion, and graduation was certainly in advance of anything which the musical culture of the country was prepared to sustain with strong patronage. During the 13 years since its opening in 1872, but 15 students have been graduated. Of these but 2 have been able to meet the serious requirements for the baccalaureate degree in music. Last year, though the membership of the department was 35, not one of the small advanced class succeeded in completing the course. Lack of pecuniary means was the difficulty with several. Every year many desire to enter, but discover that they have not the requisite qualifications. Fortunately for the cause of musical education in America those most influential in the management of the college are not in the least impatient for numbers, or for a superficial popular favor. They prefer to

wait until the preparatory schools and conservatories can furnish students of the grade required. Several of the trustees of the university are lending material assistance in money and in personal service to develop and strengthen the New England Conservatory of Music as one of the natural feeders of the college, as, in fact, the chief of them. Very important changes in the literary requirements for graduation out of this into the College of Music have just been made. By and by, when the feeders are strong, the college will become all that its far-sighted projectors set before them in anticipation. A gift of \$100,000 would greatly accelerate the process.¹

Since the reorganization of the New England Conservatory and its establishment in the palatial quarters on Franklin Square, the expenses of the college are guaranteed by the trustees of the conservatory.

COLLEGE OF AGRICULTURE.

In the original statutes of organization of Boston University provision was made for a college of agriculture. The financial situation after the great fire of 1872, however, made it plain that many years would necessarily elapse before a department of this kind could be established upon an adequate foundation. It was also ascertained that the trustees and officers of the Massachusetts Agricultural College at Amherst were willing to furnish instruction of the kind desired, and to coöperate with the university in the promotion of its aims in this direction. Accordingly, in January, 1875, the trustees of the State institution unanimously accepted certain propositions from the university corporation by virtue of which the college secured an honorable alliance with the university, and the university substantially an agricultural department. The articles of agreement were unanimously ratified by the trustees of the university February 11, and were printed in the report of the college to the legislature for 1874-75. (See also the Sixth Annual Report of the President of Boston University, pp. 26, 27.) In the 15 years which have since elapsed the alliance has greatly contributed to mutual advantage. At no time has anything occurred to mar the cordiality of the relationship or to weaken the effectiveness of the coöperation. In the mean time the university has directed many students to the college, and the students of the college have, with but few exceptions, matriculated in the university and on graduation been received into permanent membership in the University Convocation.

SCHOOL OF ALL SCIENCES.

On a former page reference has been made to the School of All Sciences, and to its unique significance as the crowning department of the university. But for the financial disasters of 1872 it is believed that this school would before the present time have become the most conspicuous and effective of all yet organized. At the time that it was planned no similar graduate department, with instruction, examinations,

¹"Voted, That we are in favor of establishing a college of music, provided an endowment of not less than \$100,000 be secured for it."—Action of the corporation, June 21, 1872, the meeting in which the question was first considered.

and advanced degrees for graduate students, existed in any American university. Not until 1873 was the attainment of the degree of master of arts even in Cambridge conditioned upon work done and examinations passed subsequent to the reception of the bachelor's degree. It was intended that this school, novel in name as well as in purpose, should before this time be all, and even more than all, that the since-founded Johns Hopkins University in its graduate departments has become.

The very first public announcement made by the university relative to this department presented the following unprecedentedly broad and comprehensive prospectus:

When fully organized, the instruction presented will include all branches of knowledge adapted to the ends of a universal post-graduate school.

To qualified specialists it will aim to provide, as rapidly as resources shall permit, thorough instruction in—

All cultivated languages and their literatures.

All natural and mathematical sciences.

All theological, legal, and medical studies.

All fine arts, properly so called.

All branches of special historical study, etc.

For qualified students of generalizing aims, instruction will be provided as rapidly as possible in the universal sciences. Under this term are included all those disciplines in which the matter common to several special sciences is treated as a larger whole. When this is done genetically, there results, according to the method employed, a universal or comparative history of the matter treated; when statically, a universal or comparative science of it; when philosophically, a universal or comparative philosophy of it. Here, therefore, belong such sciences as these:

Universal or comparative history of languages.

Universal or comparative philology.

Universal or comparative philosophy of language, or philosophy of language universally considered.

Universal or comparative history of religions.

Universal or comparative theology.

Universal or comparative philosophy of religion, or philosophy of religion universally considered.

Universal or comparative history of laws.

Universal or comparative jurisprudence.

Universal or comparative philosophy of law, or philosophy of law universally considered.

Universal or comparative history of societies.

Universal or comparative sociology.

Universal or comparative philosophy of society, or philosophy of society universally considered.

These sciences are all of recent birth, several of them, indeed, scarcely christened; but all of them are legitimate children of the new science and new methods of the nineteenth century. Others are sure to follow.

Of course the realization of a plan so comprehensive must be the task of generations. It will require immense endowments. At the same time a good beginning has been made. Despite all losses and limitations of a financial kind, provisions have been made which have been highly appreciated by increasing numbers of graduates from scores of

American colleges. How steady the growth of the school in students has been may be seen in the following record of attendance year by year, 7, 11, 11, 23, 37, 39, 45, 53, 73, 78, 101, 102, 100, 107, 114.

Prof. John W. Lindsay was acting dean of the school from the beginning until his resignation in 1882; he was followed in the same duties by President Warren until 1887, and by Professor Sheldon in 1887-88. Since that date the dean has been Prof. Borden P. Bowne, LL. D.

In connection with the subject of the School of All Sciences, it would seem appropriate to refer to the service which the Boston University has rendered in furtherance of the establishment of the American School of Classical Studies at Athens and of an American School of Archaeology in Rome. The following is taken from the president's annual report for the year 1885-86:

"The corporation of Boston University was the first body in America to discern what similar opportunities and privileges (referring to those enjoyed by Germany and France) at the ancient centers of Greek and Roman life could do for American scholarship, and to take practical measures for securing them. Though unable to found beyond the seas national schools with generous stipends for officers and students, it perceived that we could at least direct public attention to the advantages existing in those historic cities, and to the need of traveling fellowships to enable earnest and exceptionally qualified students to reach them. By direct negotiations with the authorities of the National University at Athens, and with those of the Royal University at Rome, we secured a reciprocally advantageous alliance by virtue of which we became entitled to represent those institutions annually to the American public, and to offer to the graduates of American colleges the opportunities named in the circulars of our School of All Sciences. One of the conditions of this academic 'reciprocity treaty' is that graduates of the Universities of Athens and Rome shall be entitled to attend without tuition charges any of the lectures and instruction presented in Boston University. As early as in the second volume of the University Year Book, the indispensableness of foreign study to every candidate for the highest chairs in the classical and modern languages, in history, in archaeology, and in art, was set forth at some length, and the successful consummation of our negotiations announced.

"Of the alliance the rector of the University of Athens, a year or two later, wrote: 'We feel a deep and hearty satisfaction in the spiritual bond which unites the Universities of Boston and Athens, and prize to their fullest extent the advantages which may arise from the connection, and accordingly wish to contribute in proportion to our ability to their preservation and enlargement, by communication and interchange of intellectual advances, and of yearly statements of events.' Equally cordial and friendly were the terms in which the rector of the University of Rome expressed the good will and appreciation of his colleagues: 'We desire that our relationships may become ever more and more intimate, and that we may be able mutually to assist each other in augmenting the intellectual forces of our respective countries.'

"Only a very few years after attention had thus annually been called to the importance of archaeological and related studies on the very soil of ancient Greece and Italy, and partly in consequence of this call, a number of American Hellenists united in a movement looking to the establishment of an 'American School of Classical Studies' in Athens."¹

¹ See Twelfth Annual Report of Boston University, pp. 51, 52. Boston University Year Book, vol. XIII, p. 4.

UNIVERSITY CONVOCATION.

From this account of the department of graduate instruction to the consideration of the status of the graduates as a body the transition is easy and natural. In few things did Boston University more radically depart from general American tradition than in its conception of graduation and in its statutes relative to its convocation. The following extract from the fourth annual report explains the conception in question:

In most, if not all, American universities graduation terminates the membership of the student. Commencement day sunders not only the bond that binds him in daily association to his class, but also that which unites him to the institution itself. A triennial or quinquennial catalogue may thenceforward, as a matter of history, show that he was once a member, and that he is living or dead; but it is only as a matter of history. In the universities of Germany, where graduation is a matter of little account, and is sought by exceedingly few, the laws of the institution generally fix a limit, for example, 5 years from the time of matriculation, when by force of the regulation the membership of the student expires.

Entirely different is the theory of membership adopted in this university. Here real membership is to begin when in the other case it ceases. Before taking his first degree the student is in an important sense a probationer. He can reach a permanent life-membership only by gaining at least one degree. If he can win his first degree, he is immediately promoted to membership in the university convocation, where through life he is effectively related to the conduct and government of the institution. Under this plan, which more resembles that of the English universities than any other, graduation is not the excision of a student from the body academic, not the disinheriting of a son by a *Mater* no longer *alma*, not the expatriation of a citizen by a local literary republic; it is promotion, a reception into fuller membership, a loading with new honors and responsibilities. The superiority of the plan over the ordinary one, its tendency to give unity and strength and commanding public influence to the university, is obvious at a glance.

The university convocation, then, consists of all persons who have received any degree or diploma of graduation from any of the schools or colleges of the university. Unlike the case of an alumni association, membership in it is not a voluntary matter with the individual. In another important respect it differs from alumni associations, and that is that the president of the university is ex-officio president of the convocation. The body is thus no subordinate appendage or annex to the university; it is a most important, if not the most important, constituent of the university itself. It is entitled to representation in the government of the institution, and is at present represented in the governing corporation by several trustees of its own nomination. Other members are found in the faculties, in the senate, and the council. As time goes on and the scholarship of the graduates matures, such representations will naturally increase in numbers and in influence. The convocation already numbers more than 2,000.¹

¹ There are multiplying indications of literary and scientific fruitfulness on the part of many members of the convocation. * * * Just now (1888) the public is enjoying the reading of an unusually able and fair-minded historico-scientific review of the Darwinistic discussion, entitled "Evolution of To-day." H. W. Conn, PH.D., the author of the work, is a youthful member of this convocation, having been ad-

Subordinate divisions of the convocation are called chapters. Thus the graduates of the School of Theology constitute the Alpha chapter of the convocation, those of the College of Liberal Arts the Beta chapter, and so on. These meet for literary and scientific work once a month. Each of the professional schools and the College of Liberal Arts has also an alumni association which meets once a year or oftener for purposes of a more social character.

mitted to the degree of bachelor of arts as recently as 1881, and to the degree of master of arts in 1882. The ablest theological reviews in their current issues are paying high and deserved honor to Prof. Henry C. Sheldon's two-volumed work on "The History of Christian Doctrine." Its author is one of our own bachelors of sacred theology, class of '71. A lately issued American volume gives, in beautiful English, original metrical versions of the famous Italian "Sonnets of Michael Angelo." To a number of them, as indication of the authorship of the translation, there are appended the two modest initials "E. C." The same, being interpreted, signify Miss Eva Channing, of the College of Liberal Arts, class of '77. From the same pen the scholarly public has previously welcomed an excellent translation of Professor Delbrück's "Introduction to Comparative Philology." The most successful of recent text-books for the study of the Hebrew is undoubtedly Dr. H. G. Mitchell's "Hebrew Lessons," and Professor Mitchell, now in the service of the university, is an alumnus, class of '76. One of the most valued *collaborateurs* upon the Boston review which bears the name "Education" is Miss Marion Talbot, of the class of '80, College of Liberal Arts. Critics of various church affiliations speak in high terms of a late work entitled "Hymn Studies." It is from the pen of Rev. C. S. Nutter, class of '71, School of Theology. In the Peabody Museum of Ethnology at Cambridge, Miss Cordelia A. Studley, M. D., now deceased, accomplished scientific work which found appreciative mention in European periodicals. She was a graduate of our School of Medicine, class of '76.

Several of our law-school classes can already show more than one author of recognized worth. Thus the class of '75 presents us with at least two: Mr. John M. Gould, author of a standard treatise on "The Law of Waters," and Mr. George F. Tucker, author of a useful manual on "The Law of Wills." In the class of '76 may be noticed Mr. Edmund P. Dole, who has now passing through the press a book entitled "Talks about Law," and Mr. William V. Kellen, who has published a very acceptable "Index-Digest to the Massachusetts Decisions from the Beginning to the Present Time." Of the class of '78 Mr. George W. McConnell has written a valuable treatise on the "Law of Trustee Process;" Mr. George R. Swasey has edited "Benjamin on Sales;" and Mr. Francis L. Wellman, in the "American Law Review," has published an article on "Legal Education" which has attracted wide attention. The class of '79 is represented by Mr. Wayland E. Benjamin, who has brought out a highly esteemed edition of "Chalmers on Bills and Notes." For '80 Mr. Eugene L. Buffinton may answer, he having prepared and printed the first volume of the "Boston University Reports," and being now at work upon the second. Not to be behind her brothers in authorship, Miss Robinson, of the class of '81, is carrying through the press an octavo of 600 pages, entitled "Law made Easy: A Book for the People." Even a student who was a member of the school as late as 3 years ago, Mr. Elisha Greenwood, has just brought out a large volume treating of "The Law of Contracts-against-Public-Policy." Evidently our School of Law is training writers as well as pleaders.

Time would fail me, were I to allude ever so briefly to the literary work of the older and younger theological graduates who have made important contributions to the future bibliography of the university, several of them in languages other than their own.

FINANCES OF THE UNIVERSITY.

The chief of the deceased benefactors of Boston University have been Isaac Rich, Jacob Sleeper, and Lee Claflin. The founding of the institution first became possible by the decision of Mr. Rich to devote to this purpose the bulk of his estate. On his decease, January 13, 1872, it was found that by the terms of his will private bequests to the amount of \$23,000 were to be paid from his estate, together with life annuities to the amount of \$3,000 per annum; and that at the end of 10 years the whole remaining property, together with its accumulations, was to be made over to the trustees of Boston University. The trustees under the will were also directed to pay to the university, 3 years from his decease, the sum of \$10,000; 2 years later the sum of \$20,000, and 2 years after that \$30,000. The estimated value of the estate after its settlement was over \$1,000,000.

The Hon. Jacob Sleeper, in whose honor the hall of the College of Liberal Arts is named, gave at different times property valued at more than a quarter of a million dollars.

The great fire of 1872 laid in ashes nearly every building in which the Rich estate was invested, while the panic which followed so nearly destroyed the marketable value of other investments that new buildings could be erected only by mortgaging. In this way a staggering blow was inflicted upon the infant institution—a blow the more serious as it disabled so generally all who would gladly have rallied to its support. Fortunately, however, courageous and able men were at the head of its affairs, and by prudence and good management the crisis was safely passed. Few large gifts have been received, yet so skillfully has the property been administered that for every year which has elapsed since the present fiscal year was established the treasurer's report has shown a gain of assets.

The following table, exhibiting these gains, is one well worthy of permanent historic record:

Year ending August 31—	Total assets.	Liabilities.	Excess of assets.
1879.....	\$394,944.28	\$64,379.07	\$330,565.21
1880.....	409,480.19	76,255.58	333,224.61
1881.....	431,008.86	80,962.10	350,026.76
1882.....	1,103,577.23	130,622.94	972,954.29
1883.....	1,179,535.99	155,974.64	1,023,561.35
1884.....	1,228,639.71	189,370.25	1,039,269.46
1885.....	1,135,272.92	72,165.67	1,063,107.25
1886.....	1,242,353.16	98,121.58	1,144,231.58
1887.....	1,288,971.45	36,391.02	1,252,580.43
1888.....	1,282,605.89	2,833.51	1,279,772.38
1889.....	1,420,207.84	3,434.10	1,416,773.74

PRESIDENT WILLIAM F. WARREN.

Boston University is largely the creation of a single individual. To establish and endow it there was certainly need of the founders' money, but a greater need than this was to place at its head a man of broad

culture, comprehensive plans, and an unbounded faith in the successful development in America of the higher education along the lines of the best Christian thought of our time. Such a man was found in President W. F. Warren, D. D., LL. D., and from the beginning of its history until now a large measure of the success which the university has achieved must be credited to the far-seeing plans of its president, and to the advanced position which he has taken in respect to all matters pertaining to university education. President Warren comes of good New England stock, tracing back, as he does, his ancestry to the Mathers and to Elder John White. He was born in Williamsburgh, Mass., in 1833, and after receiving his bachelor's degree from Wesleyan University spent some 7 years in Europe and the East. In 1867 he was chosen acting president of the Boston Theological Seminary, which position he held until his election as first president of the university. In addition to the office of president he holds that of professor of comparative theology and of the history and philosophy of religion. As a writer Dr. Warren takes high rank. Some of his published works, notably that one entitled "Paradise Found; the Cradle of the Human Race at the North Pole; a Story of the Prehistoric World," has achieved a national fame. Others, some in German and some in English, are treatises upon theological, cosmological, and other subjects.

CHAPTER XVI.

MASSACHUSETTS AGRICULTURAL COLLEGE.

[Prepared from official documents and authorized.]

The first effort to establish in Massachusetts an institution where scientific and practical agriculture should be taught was made in 1849, by Hon. Marshall P. Wilder, in an address delivered in September of that year before the Norfolk Agricultural Society upon the subject of agricultural education. The suggestions contained in this address were received with so much favor that the following year (1850) a bill was prepared providing for the establishment of an agricultural college and an experimental farm. This bill passed the senate without a dissenting vote but was rejected in the house. The next step was the creation of a board of commissioners, whose duty should be to report, at the next session of the legislature, upon the expediency of establishing agricultural schools or colleges. This commission, which consisted of Marshall P. Wilder, Edward Hitchcock, and others, made their report to the legislature in 1851. This report embraced the investigations of Dr. Hitchcock in regard to the agricultural schools and colleges of Europe, and contained an account of more than three hundred and fifty of these institutions. Nothing further was done towards organizing a college of agriculture till 1856. In that year several of the gentlemen who had been most active in the project for planting a college now associated together for the establishment of a school, and obtained an act of incorporation under the title of the Massachusetts School of Agriculture. Of the persons named in this act the name of Marshall P. Wilder heads the list. In 1860 its charter was transferred to several enterprising citizens of Springfield, who determined to raise by subscription \$75,000 for the opening of the school in that city, relying upon the legislature for a further endowment. This project would probably have succeeded, had not the call to arms absorbed public attention. In 1858, Hon. Justin S. Morrill, Representative from Vermont, submitted a bill to Congress donating a portion of the public lands¹ for the endowment of a college in each State, to teach such branches of learning as are related to agriculture and the mechanic arts. This bill, after prolonged discussions for two sessions, passed both houses of Congress, but was vetoed by President James Buchanan. The measure was finally enacted July 2, 1862, being approved by President Abraham Lincoln.

¹ "To each State a quantity equal to 30,000 acres for each Senator and Representative in Congress," based upon the apportionment of representation under the census of 1860.



MASSACHUSETTS AGRICULTURAL COLLEGE.

Date.	Remarks.
1863 (April 18)	Acceptance of Congressional grant by the legislature of Massachusetts.
1863 (April 27)	Act dividing income resulting from sale of public lands and giving one-third to Massachusetts Institute of Technology.
1863 (April 29)	Act to incorporate the trustees of Massachusetts Agricultural College.
1863 (Nov. 18)	Corporation organized with Governor Andrew, president; A. W. Dodge, vice president; and C. L. Flint, secretary.
1864 (Jan. 6)	First annual report of the college made to the legislature, signed by G. Marston, W. S. Southworth, and C. L. Flint.
1864 (May 11)	Act changing name of corporation to "The Massachusetts Agricultural College," allowing sale of scrip, and granting \$10,000 to defray necessary expenses.
1864 (May 25)	College located at Amherst by trustees.
1864 (June)	Governor Andrew and council, with executive committee of trustees, namely, Messrs. French, Colt, and Davis, visit Amherst to examine location.
1864 (Sept. 30)	Governor and council approve location.
1864 (Nov. 29)	Hon. Henry F. French elected president.
1865 (May 5)	Act authorizing the town of Amherst to raise \$50,000.
1865 (May 15)	Act granting \$10,000 to aid in the establishment of the college.
1866 (May 26)	Board of agriculture constituted overseers of the college; authorized to locate State agricultural cabinet and library, and to hold its meetings at said college; and president of college constituted a member <i>ex officio</i> of said board.
1866 (Sept. 29)	Resignation of President French.
1866 (Nov. 7)	Hon. Paul A. Chadbourne elected president. ¹
1866	Hon. Levi Stockbridge elected farm superintendent and instructor in agriculture.
1866	Dr. Nathan Durfee and Leonard M. and Henry F. Hills give \$20,000 for the establishment and maintenance of plant house and botanic garden.
1867 (June 1)	Resignation of President Chadbourne on account of ill health.
1867 (Aug. 7)	Col. William S. Clark elected president; Ebenezer S. Snell, professor of mathematics; and Henry H. Goodell, professor of modern languages.
1867 (Oct. 2)	First class admitted to the college, numbering 47 members before the close of the term.
1867	South dormitory, laboratory, and south boarding house completed; 73 acres of land added to the college farm, and granite quarry in Pelham purchased.
1867	Washington Irving Literary Society founded.
1867	Gift by Hon. Marshall P. Wilder of 1,300 specimens of choice plants to the Durfee plant house.
1868 (March 11)	Resolve by the legislature, authorizing the governor to issue arms and equipments to the college.
1868 (May 1)	Resolve allowing \$50,000 for the erection of buildings, etc.
1868 (May)	New England Agricultural Society holds a trial of plows on the college farm.
1868 (Dec. 8)	Country meeting of the State Board of Agriculture held at the college.
1868	North dormitory, north boarding house, botanic museum, and Durfee plant house completed.
1868	Charles A. Goessmann elected professor of chemistry.
1868	Samuel F. Miller elected professor of mathematics, physics, and civil engineering.
1868	College Christian Union founded.
1869 (April 25)	Resolve allowing \$50,000 for the erection of buildings, etc.
1869 (June 20)	The second national exhibition of agricultural machines, instituted by the New England Agricultural Society, held at the college for 4 days.
1869	Henry E. Alvord, U. S. Army, detailed for duty at the college as professor of military science and tactics.
1869	College hall, and farmhouse and barns built.
1869	Gift of \$2,000 by the Hon. William Knowlton for the purchase of the herbarium collected by W. W. Denslow.
1869	First index published.
1870 (June 18)	Resolve allowing \$25,000 for the payment of debts.
1870 (Oct. 28)	Death of Professor Miller.
1870	Rev. Henry W. Parker elected professor of mental, moral, and social science, and college preacher.
1871 (May 26)	Act to amend an act incorporating the Massachusetts Agricultural College, authorizing the trustees to elect their own successors.
1871 (May 26)	Resolve allowing \$50,000 for payment of debts and for current expenses, and adding \$141,535.35 to the perpetual fund of the college; also resolve ordering 10,000 extra copies of the college report to be printed.
1871 (July 19)	Graduation of the first class, numbering 27.
1871 (July 21)	Winning of the intercollegiate regatta by the Agricultural College crew (time, 16 minutes 46½ seconds).
1871	Selim H. Peabody elected professor of mathematics, physics, and civil engineering.
1871	Henry J. Clark elected professor of comparative anatomy and veterinary science.
1871	Gift of Miss Mary Robinson of \$2,000 for the endowment of a scholarship.

¹Prof. Paul A. Chadbourne was elected president November 7, 1866, but by reason of ill health was obliged to resign the June following. The course of study which he marked out has been substantially followed ever since. Professor Chadbourne was a wonderful man, as versatile as any one we can name; a scholar, a philosopher, a scientist, a Christian minister, and a teacher, he possessed qualities which are rarely combined in one man: the shrewdness and economics of a Yankee, practical familiarity with details, decision of character, great administrative power, the faculty of separating what is practical from what is merely theoretical, great activity and energy, united with method and system. He was, therefore, the man of all others for the college during its formative period.—Hon. C. G. Davis, historical address.

Date.	Remarks.
1872.....	Levi Stockbridge elected full professor of agriculture.
1872.....	Ahner H. Merrill, U. S. Army, detailed as professor of military science and tactics.
1873 (July 1).....	Death of Professor Clark.
1873.....	Noah Cressy elected professor of veterinary science.
1873.....	Farnsworth rhetorical prizes given by Isaac D. Farnsworth, esq.
1873.....	Grinnell agricultural prizes founded by Hon. William Clafin.
1873.....	Peabody entomological prize given by Prof. Selim H. Peabody.
1873.....	Hills botanical prizes established.
1874 (June 5).....	Resolve allowing \$18,000 in aid of the college.
1874.....	Resignation of Professor Peabody.
1874.....	Samuel T. Maynard elected gardener and assistant professor of horticulture.
1874.....	William B. Graves elected professor of mathematics, physics, and civil engineering.
1874.....	Organization of the "Associate Alumni of the Massachusetts Agricultural College."
1875.....	Agreement on the part of the college to represent the agricultural department of Boston University.
1875.....	Charles A. L. Totten, U. S. Army, detailed as professor of military science and tactics.
1875.....	Gift by Prof. Charles S. Sargent of trees, shrubs, and herbaceous plants.
1876 (April 20).....	Death of Dr. Nathan Durfee, treasurer and benefactor of the college.
1876 (April 28).....	Resolve allowing \$5,000 for current expenses.
1876 (May 20).....	President Clark starts for Japan to organize an agricultural college, leaving Professor Stockbridge in charge.
1876.....	Resignation of Professor Cressy.
1876.....	Military diploma first issued by Lieutenant Totten.
1876.....	Military prize first given by Lieutenant Totten.
1877 (May 16).....	Resolve, allowing \$5,000 for current expenses, one-half for payment of manual labor by the students.
1877.....	President Clark returns from Japan.
1877.....	New greenhouse built by Hon. William Knowlton.
1878.....	One hundred and fifty free scholarships offered by the trustees.
1878.....	Bequest of \$1,000 by Whiting Street, esq., for the establishment of a scholarship.
1878.....	Gift of \$1,000 by Prof. Levi Stockbridge for experimental purposes.
1878.....	Charles Morris, U. S. Army, detailed for duty as professor of military science and tactics.
1879 (April 24).....	Act granting \$32,000 to pay the indebtedness of the college, and making the trustees personally liable for any debt hereafter incurred in excess of the income of the college.
1879 (May 1).....	Resignation of President Clark.
1879 (June 12).....	Owing to diminished income trustees sell at public auction all the blooded stock belonging to the college, except the Ayrshire herd.
1879.....	Charles L. Flint elected president.
1879.....	Resignation of Professor Parker.
1879.....	Samuel T. Maynard elected full professor of botany and horticulture.
1880 (March 24).....	Resignation of President Flint.
1880 (April).....	Levi Stockbridge elected president.
1881 (Aug. 25).....	Resignation of Professor Graves.
1881.....	Charles L. Harrington appointed professor of mathematics, physics, and civil engineering.
1881.....	Victor H. Bridgman, U. S. Army detailed for duty as professor of military science and tactics.
1882 (Jan. 12).....	Resignation of President Stockbridge, to take effect March 18.
1882 (January).....	Hon. Paul A. Chadbourne elected president.
1882 (May 12).....	Resolve allowing \$9,000 for the erection of a drill hall, and for repairs.
1882 (May 12).....	Act establishing the Massachusetts State Agricultural Experiment Station.
1882.....	Resignation of Professor Harrington.
1882.....	Austin B. Bassett elected professor of mathematics, physics, and civil engineering.
1883 (Jan. 5).....	Durfee plant house destroyed by fire.
1883 (Feb. 23).....	Death of President Chadbourne.
1883 (Feb. 27).....	Professor Goodell acting president till September 1883.
1883 (June 2).....	Resolve allowing \$10,000 annually for four years, and establishing 80 free scholarships.
1883 (July 5).....	James C. Greenough elected president.
1883.....	Manly Miles elected professor of agriculture.
1883.....	Completion of drill hall.
1883.....	Gift by Leander Wetherell, esq., of Boston, of 1,410 bound volumes to the library.
1884 (May 8).....	Resolve allowing \$36,000 for the erection of a chapel and library building, for the completion of president's house, and for repair of north college; and also limiting term of office of trustees.
1884.....	Resignation of Professor Bassett.
1884.....	Clarence D. Warner elected professor of mathematics, physics, and civil engineering.
1884.....	Horace E. Stockbridge elected associate professor of chemistry.
1885 (Feb. 4).....	South dormitory destroyed by fire.
1885 (June 11).....	Resolve allowing \$45,000 for rebuilding south dormitory, erecting a tower on the chapel building, and purchasing scientific apparatus.
1885 (June 11).....	Resolve allowing \$6,000 for the erection of a laboratory for the Massachusetts experiment station.
1885 (June 19).....	Act making the annual report of the college and the annual report of the experiment station public documents.

Date.	Remarks.
1885 (Nov. 29).....	Death of ex-President French.
1885.....	Resignation of Prof. H. E. Stockbridge.
1885.....	Charles Wellington elected associate professor of chemistry.
1885.....	George E. Sage, U. S. Army, detailed for duty as professor of military science and tactics.
1885.....	President's house completed.
1886 (March 9).....	Death of ex-President Clark.
1886 (April 16).....	Resolve making perpetual the allowance of \$10,000 annually, granted July 5, 1883.
1886.....	Completion of south dormitory, chapel and library building, and laboratory of Massachusetts experiment station.
1886.....	Henry James Clark natural history prize given.
1886.....	Resolve allowing \$7,500 for repairs and needs of the college.
1886.....	Gift by Hon. Marshall P. Wilder of several hundred volumes to the college library.

At the period of the college commencement in June, 1886, Henry H. Goodell, who had been a professor in the college since the summer of 1867, and prior to the admission of its first class, and who had also held various other positions of all grades up to that of acting president, was elected president of the college, and is holding the position to the general acceptance and gratification of the trustees, the faculty, the students, and the community.

The following list of the graduates and nongraduates, and their occupations, was prepared in 1887:

	Living.	Dead.	Total.		Living.	Dead.	Total.
Bachelors of science..	260	8	268	Nongraduates	372	34	406

DEGREES.

	Alumni.	Nongraduates.	Total.		Alumni.	Nongraduates.	Total.
M. D.....	14	11	25	V. S.....	1	1	2
Jur. D.....		1	1	Ph. D.....	2	1	3
L.L.B.....	7	1	8	B. D.....	1		1
D. V. S.....	5	1	6	D. D. S.....		1	2
B. Sc. (Boston University).....	127		127	B. A.....	2		2
B. Sc. (elsewhere).....	1	5	6	C. E.....		1	1
				E. M.....		1	1

OCCUPATIONS.

Ordained clergymen ..	4	1	5	Lawyers.....	9	7	16
Physicians.....	11	11	22	Dentists.....	1	1	2
Veterinary surgeons..	6	1	7	Teachers.....	17	10	27
Journalists.....	8	3	11	Engineers.....	18	9	27
Chemists.....	17	4	21	Architects.....	1		1
Agricultural pursuits..	84	105	189	Business pursuits ..	70	155	225
Army.....	1	2	3	Navy.....		1	1
Miscellaneous.....	10	37	47	Unknown.....	3	25	28

The past 3 years have been marked by the exceptional prosperity of the college.

In the matter of instruction, experiment was made in 1887 of inviting gentlemen not connected with the college to lecture on special topics to those pupils fitted by previous study to profitably listen to them, the

lecture being followed by a general discussion in which the students themselves participated. The greater part of these lectures have been delivered before the senior and junior classes, while a few have been open to the whole college. The value of this instruction has been very apparent. Though the material was the same as that used in ordinary instruction, yet the presentation of it in a different light by different individuals—by men who had made it a careful study—renewed the interest of the student and awakened inquiry.

CHEMICAL DEPARTMENT.

Of the work performed at the college, that portion is allotted to the chemical department which is primarily designated "Agricultural Chemistry." This in its narrower signification embraces the study of only a few of the elements of matter, such as experience has shown to be indispensable to the development of living forms, whether vegetable or animal. The study of these includes a review of what is known as to their occurrence in the original earth's crust and the surrounding atmosphere; their existence in the soil, formed chiefly from the breaking down of rocks; their functions in plant and animal organisms, and finally their return to inorganic nature.

This involves a discussion of the cheapest methods of providing those elements and their compounds for the nutrition of plants and animals; or, in other words, the chemistry of the economical production of crops and herds.

The study of chemistry in its application to agriculture does not, of necessity, imply a presentation of the science in a general way. It would, however, be almost entirely useless to give such instruction to persons having had no previous chemical discipline. As, therefore, our students come to the college before taking this general study, a course in the underlying physical and chemical laws is first taken up. After this follows study in the chemistry of common life, and then the special course, as above indicated.

Changes in two directions were inaugurated in this department during 1888. The one pertained to the sequence of chemical studies with reference to those of other departments; the second consisted in the extensive improvement of teaching appliances.

The revised course of study adopted by the board of trustees advanced the commencement of the course in chemistry from the beginning of the sophomore to the beginning of the freshman year. Thus the course now extends over the freshman, sophomore, and senior years, instead of the sophomore, junior, and senior years, as before.

MILITARY DEPARTMENT.

This is rightly considered one of the most important departments of the college. The cadets represent all classes of the community, and are not, as many believe, drawn entirely from the farming class. Their ages vary between 15 and 24, and they differ as much in stature as they do in age. Each cadet is required to provide himself with a uniform as soon

after entering as possible, as the preliminary exercises are taught much more rapidly and with greater comfort to the freshmen in uniform than in citizen's dress. The drill of the freshman class for the first 2 months of the course is confined to the setting-up drill, or, in other words, to correcting any physical defects that may detract from the appearance or in any way retard the growth or development of the student. In no case is a musket put into the hands of a student until he has been taught thoroughly how to carry himself and present that appearance that marks the well set-up man. As soon as arms are issued to the recruits they are taught in squads of four men each how to handle the piece, great care being taken to see that the person is not deranged or the correct soldierly bearing disturbed. As soon as the cadet becomes familiar with the piece the marching drill follows. In the sophomore year the standing gun drill is taken up, which is specially important as an aid to bringing the physical system of the student to the fullest development.

Target practice which was heretofore voluntary, and took place after the Saturday morning inspection, is made a part of the regular drill, and the junior class is detailed for that work, and required to spend that hour at the target. The importance of this exercise can not be overestimated. It educates the eye, steadies the muscles, and gives that perfect reliance on the rifle that made the sharpshooters so important during the last war. In fact every army in the world is devoting a large part of its time to target practice, and the general and State governments encourage the militia to perfect themselves in this most important part of a soldier's education. On the skirmish line, which closely resembles the line of battle of the future, the cadet is taught to believe that to individual effort and self-reliance is to be attributed the success of his party, and this feeling of independence and reliance on the arm he has in his hands is fostered throughout his military training. Every graduate is fitted to take the position of an officer in any State military organization, and fill the position with honor to himself and the State. In order that they may have that practice that is necessary to fit them for these positions, the seniors are required to hold themselves in readiness at all times to take command of the companies or battalion, and drill in any of the prescribed exercises. In fact, every drill that takes place is commanded by a cadet, and when they leave the college they are trained officers, whose knowledge will be invaluable in time of need.

The instructor keeps constantly in view the idea that the cadets are fitting themselves as teachers, and they must not only know the tactics but be able to teach them to others. There is in this department a theoretical as well as a practical course of instruction.

THE EXPERIMENT DEPARTMENT.

February 25, 1887, an act was passed by Congress under which the Hatch Experiment Station of the Massachusetts Agricultural College was established.

At a regularly called meeting of the trustees of the college, held at the office of the secretary of the board of agriculture, Boston, March 2, 1888, it was voted to establish this department, to be styled "The Experiment Department of the Massachusetts Agricultural College,"¹ and a committee consisting of the committee on farm and horticultural departments, together with such other trustees as were members of the board of control of the State experiment station, was appointed with full executive powers.

Recognizing the fact that the equipment and facilities of the State agricultural experiment station enabled it to make, more economically and effectively, such chemical investigations as might from time to time arise, than could be done at the college, without a large outlay for apparatus and other necessary appliances, the committee entered into an agreement with the board of control of the State experiment station, in consideration of the payment of \$5,000 annually, to perform the chemical work demanded; the results of all investigations, paid for by any surplus of money not required for chemical purposes, to be published in the bulletins of the Hatch experiment station, as also in those of the State, if desired.

The other departments of the college are agricultural, botanical, natural history, and mathematical.

FACULTY, TERMS OF ADMISSION, COURSE OF STUDY, DEGREES, AND SCHOLARSHIPS.

The board of instruction consists of 12 members, of which Prof. Henry H. Goodell, M. A., LL. D., is president.

Candidates for admission to the freshman class are examined, orally and in writing, upon the following subjects: English grammar, geography, arithmetic, algebra to quadratic equations, the metric system, and the history of the United States.

Candidates for higher standing are examined as above, and also in the studies gone over by the class to which they may desire admission.

No one can be admitted to the college until he is 15 years of age. Every applicant is required to furnish a certificate of good character from his late pastor or teacher. Candidates are requested to furnish the examining committee with their standing in the schools they have last attended. The previous rank of the candidate will be considered in admitting him. The regular examinations for admission are held at the Botanic Museum, at 9 o'clock a. m., on Thursday, June 20, and on Tuesday, September 3; but candidates may be examined and admitted at any other time in the year.

The annual expense for each student is estimated at from \$224.15 to \$373.55.

¹ This name was subsequently changed to the "Hatch Experiment Station of the Massachusetts Agricultural College," to prevent confusion with the State agricultural station already located on the college grounds.

Course of study.

FRESHMAN YEAR.

	Agriculture.	Botany and horticulture.	Chemistry.	Zoology and veterinary science.	Mathematics.	Languages.	Drawing and composition.	Military exercises.
Fall	Climatology, or relations of weather and farming—2. Farm accounts, history of agriculture—2. Breeds of live stock. Hand tools—5.	Botany, structural—5.	Chemistry, principles and metalloids—5. Metals—4'.	.....	Algebra—5	Latin—3	Composition—1.	3'
Winter .....	.....	.....	.....	.....	Algebra and geometry—5.	Latin—4	Free-hand drawing—6.	Tactics. Half-term—1-3.
Spring .....	.....	Botany, analytical—5.	Mineralogy—4'.	.....	Geometry—3	Latin—5	Composition—1.	3'

SOPHOMORE YEAR.

Fall	Soils. Tillage and drainage—5. Mixed farming. Rotation of crops—2.	Botany, economic—5. Laboratory work—4'.	Geology—4'.	.....	Trigonometry—4	French—5	Composition—1.	Tactics. Half-term—1-3.
Winter .....	.....	.....	.....	Anatomy and physiology—5.	Mensuration—3	French—5	Mechanical drawing—5.	3'
Spring	Manures. Grains and forage crops—5.	Horticulture—8 .....	.....	.....	Surveying—7'	French—5	Composition—1.	3'

JUNIOR YEAR.

Fall	Farm implements. Harvesting and storing crops—2. Preparation and transportation of crops. Markets—2.	Market gardening—6.	.....	Zoology. Laboratory work—8.	Mechanics, draft, friction, etc.—3.	Rhetoric and composition—5.	.....	3'
Winter .....	.....	.....	Laboratory work—10.	Zoology—3	Physics, sound, and heat—4'.	English literature—5.	Composition—1.	3'
Spring	Special crops. Farm routes—1.	Forestry and landscape gardening—6'.	Laboratory work—5.	Entomology—7	Physics, light and electricity—3.	English literature—4.	Composition—1.	3'

SENIOR YEAR.

Fall	Breeding and care of live stock—4'.	.....	Laboratory work. Chemistry of fertilizers—8.	Comparative anatomy of domestic animals—5.	.....	Mental science—5.	Composition and debate—1.	Military science—1-3.
Winter	Dairy farming—3	Lectures, law, etc.	Organic—3	Veterinary science—4.	Meteorology—2	Political economy—5.	Composition and debate—1.	Military science—1-3.
Spring	Agricultural review. Discussions—3.	.....	Chemical industries—3.	Geology—3 .....	.....	Constitutional history—5.	Composition—1.	Military science—1-3.

' Afternoon exercises.

Those who complete the course receive the degree of bachelor of science, the diploma being signed by the governor of Massachusetts, who is president of the corporation.

Regular students of the college may also, on application, become members of Boston University, and upon graduation receive its diploma in addition to that of the college, thereby becoming entitled to all the privileges of its alumni.

The *scholarships* established by private individuals are the—

Mary Robinson fund of \$1,000, the bequest of Miss Mary Robinson of Medfield.

Whiting Street fund of \$1,000, the bequest of Whiting Street, esq., of Northampton.

Henry Gassett fund of \$1,000, the bequest of Henry Gassett, esq., of North Weymouth.

The income of the above funds is assigned by the faculty to worthy students requiring aid.

The trustees voted in January, 1878, to establish one free scholarship for each of the Congressional districts of the State. Applications for such scholarships should be made to the Representative from the district to which the applicant belongs. The selection for these scholarships will be determined as each member of Congress may prefer; but, where several applications are sent in from the same district, a competitive examination would seem to be desirable. Applicants should be good scholars, of vigorous constitution, and should enter college with the intention of remaining through the course, and then engaging in some pursuit connected with agriculture.

The legislature of 1883 passed the following resolve in favor of the Massachusetts Agricultural College:

Resolved, That there shall be paid annually, for the term of 4 years, from the treasury of the Commonwealth to the treasurer of the Massachusetts Agricultural College, the sum of \$10,000, to enable the trustees of said college to provide for the students of said institution the theoretical and practical education required by its charter and the law of the United States relating thereto.

Resolved, That annually, for the term of 4 years, 80 free scholarships be and hereby are established at the Massachusetts Agricultural College, the same to be given by appointment to persons in this Commonwealth, after a competitive examination, under rules prescribed by the president of the college, at such time and place as the senator then in office from each district shall designate; and the said scholarships shall be assigned equally to each senatorial district. But, if there shall be less than two successful applicants for scholarships from any senatorial district, such scholarships may be distributed by the president of the college equally among the other districts, as nearly as possible; but no applicant shall be entitled to a scholarship unless he shall pass an examination in accordance with the rules to be established as hereinbefore provided.

The legislature of 1886 passed the following resolve, making perpetual the scholarships established:

Resolved, That annually the scholarships established by chapter 46 of the resolves of the year 1883 be given and continued in accordance with the provisions of said chapter.

In accordance with these resolves, any one desiring admission to the

college can apply to the senator of his district for a scholarship. Blank forms of application will be furnished by the president.

In 1888 there were awarded 6 classes of prizes with 12 recipients, for excellence in various branches of study.

LIBRARY.

This now numbers 10,000 volumes, having been increased during the year by the gift or purchase of 840 volumes. It is placed in the lower hall of the new chapel-library building, and is made available to the general student for reference or investigation. It is especially valuable as a library of reference, and no pains will be spared to make it complete in the departments of agriculture, horticulture, and botany, and the natural sciences. It is open a portion of each day for consultation, and an hour every evening for the drawing of books.

FINANCES.

Summary statement of the treasurer's report for the year ending 1888.

Assets:

Total value real estate, per inventory.....	\$233, 840. 00
Total value personal property, per inventory	36, 902. 28
Total cash on hand and bills receivable, per inventory..	5, 623. 29
	<hr/>
	\$276, 365. 57

Liabilities:

Bills payable, as per inventory	341. 68
	<hr/>
	276, 023. 89

FUNDS FOR MAINTENANCE OF COLLEGE.

Technical educational fund, United States grant, amount of	\$219, 000. 00
Technical Educational Fund, State Grant	141, 575. 35
These funds are in the hands of the State treasurer. By law two-thirds of the income is paid to the treasurer of the college, one-third to the Institute of Technology. Amount received 1888	
	\$11, 442. 00

The total income in 1888 amounted to \$22,373.54.

The group of buildings erected for the use of the Massachusetts Agricultural College are on a healthful site, commanding one of the finest views in New England. The large farm of 383 acres, with its varied surface and native forests, gives the student the freedom and the quiet of a country home.

CHAPTER XVII.

BOSTON COLLEGE, BOSTON, MASS.

By REV. A. J. E. MULLAN, S. J.

Boston College, under the direction of the Fathers of the Society of Jesus, was incorporated March 25, 1863. Its schools were first opened September 5, 1864. Though power had been granted to its directors to confer the usual degrees, except medical, there were no graduates until 1877. Beginning with but 25 students and steadily increasing year by year, it now numbers some 300 pupils. The original college building being found too small for the increasing numbers, was removed to James street and much enlarged in 1873. The year 1879 saw the opening of the English course, in which the usual studies are pursued, except the classical languages. Accommodations again becoming deficient, owing to the still growing body of students, it was determined to add to the buildings of 1873 others quite as large as those. This addition was begun in 1889.

The college is not endowed, but depends for its revenue on the tuition money of the pupils and such other aid as may from time to time be forthcoming.

What follows is taken from the Boston College Catalogue of 1888-89:

Schools were opened September 5, 1864. The college is intended for day scholars only.

The act of incorporation provides that "no student of said college shall be refused admission to, or denied any of the privileges, honors, or degrees of said college, on account of the religious opinions he may entertain." Students who are not Catholics will not be required to participate in any distinctively Catholic exercise, nor will any undue influence be exerted to induce a change of religious belief. But though no difference of creed will be a bar to admission, evidence will be demanded of the candidate to prove a good moral character.

To the original classical course was added, September, 1879, at the special instance of the most reverend archbishop, a department in which the study of the ancient languages is superseded by exclusive application to English, the modern languages, and the sciences. This course is intended to offer the advantages of a thorough English education to that class of our youth who, not intending to follow the professions, stand in no special need of classical training; but for whom it is of importance that they be well grounded in their faith, and spend, a few years at least, under healthy religious influences.

For entrance into the classical department, a knowledge of the fundamental principles of grammar and arithmetic will suffice; for entrance into the English department, a complete knowledge of these two branches will be exacted.

On admission the pupil is examined to determine what classes he should enter; and no student shall be promoted from any class till his progress justifies advancement. To prevent exclusive devotion to one pursuit, it has been found necessary, for culpable failure in one branch, to refuse promotion in all the rest. Nevertheless, on account of age or peculiar circumstances, exemption from certain studies is sometimes conceded, in which case the scholar is placed "out of course," and is not reckoned as a candidate for honors or for graduation.

The terms are \$30 per session of 5 months, payable in advance; besides the fee of \$10 for the diploma, there will be no further charge. All bills must be settled before graduation.

The first session begins on the first Monday of September; the second, on the first Monday of February; but students are not precluded from entering at other times.

The following are the ordinary holidays:

—Every Saturday;

The days of a session remaining after the close of an examination;

All the holy days of obligation;

From the 23d of December to the 2d of January;

From Wednesday in Holy Week to Wednesday in Easter Week;

The Feasts of St. Patrick and St. Aloysius;

Fast Day, Thanksgiving Day, Decoration Day.

Attendance will be required for a short time on the first and second Saturdays of the month, not for class recitations, but for certain religious or literary exercises.

The hours for school are from 8:30 a. m. to 2 p. m., with short recesses at convenient intervals. Special arrangements will be necessary, in each individual case, to excuse later arrival. During the progress of the examinations the time for closing will be somewhat anticipated.

The first half hour of each day is occupied in attendance at mass. One hour a day is devoted to arithmetic or mathematics; 2 hours a week to the study of modern languages; and the rest of the time is spent in the principal class of Latin, Greek, or English.

For each memory lesson, according to its excellence, the scholar receives a mark, grading from 10 down; for translation, from 20, and for themes or compositions, from 30, as the labor of preparation of these various exercises and their relative importance are considered to be to each other as 1, 2, and 3. At the end of each month public proclamation is made of the average of all marks, in the separate departments of classics, mathematics, and modern languages. The average of these monthly averages is what is termed the average of monthly results; at the middle examination averages are given in like manner for the various branches, and a common-examination average struck. To obtain the term average, that of the monthly results and of the examination are added, and their sum divided by 2. In the second term or session the same method is followed, and the year's results are seen in the average resulting from the combination of those of the two terms. According to this average of results for the year, commencement honors, grade, and promotions are determined.

The moral and religious part of education is considered to be incomparably the most important. Catholic students, if not excused for good reasons, are required to be present at mass every day, to recite the daily catechetical lesson, to attend the weekly lecture on the doctrines of the church, to make the annual retreat, to present themselves to their confessor every month, and, if they have not received the sacrament of penance, confirmation, or holy eucharist, to prepare for their reception.

The candidate for admission should be acquainted with, and prepared to observe, the following rules:

On arriving at the college the students will repair immediately to the cloakroom, where they will deposit their books, overcoats, etc.; thence they will proceed directly to the gymnasium, where they will remain till time for mass.

Those who are not required to be present at mass, if they arrive during mass, will remain in the gymnasium.

No class is to leave the gymnasium for the schoolroom unless accompanied by the teacher.

When anyone obtains permission to leave the classroom he is to return without unnecessary delay.

The places for recreation are the gymnasium and the court. All the rest of the premises will be considered as "out of bounds."

Playing ball, snowballing, pitching, and all games that endanger windows are prohibited.

Whoever damages the college property must make compensation.

No boisterous conduct is allowed in the corridors or classrooms at any time. Even in the gymnasium, and during recitation, the behavior should be decorous.

The use of tobacco is prohibited.

In fine, any conduct unbecoming the character of a gentleman will be regarded as a violation of the college rules.

Religious motives being habitually appealed to, little need has been experienced of frequent or severe punishment.

Flagrant offenses, such as are detrimental to the reputation of the college, or are obstructive of the good of other pupils, are grounds for expulsion.

For faults of ordinary occurrence, such as tardy arrival, failure in recitations, or minor instances of misconduct, detention after school, or the task of copying or committing to memory some lines of an author, is usually found to be sufficient penalty.

The efforts of teachers and prefects will be much facilitated if the coöperation of parents can be secured.

Parents are, therefore, earnestly requested to insist upon daily study at home, for 2 or 3 hours at least; to notify the prefect speedily in case of the withdrawal of their sons; of necessary detention from or tardy arrival at school; of failure to receive the monthly report; to attend to notifications, always sent by the prefect the second day of an unexplained absence, or for lessons signally bad during a considerable length of time; and not to pass over without inquiry averages of lessons falling below 75.

COURSE OF STUDIES IN THE CLASSICAL DEPARTMENT.

FIRST YEAR.

CLASS OF *RUDIMENTS*.

SECOND DIVISION.

English.—Catechism, Gould Brown's Grammar, Mitchell's Geography and Atlas, Kerney's Scripture History, compositions, declamation.

Latin.—Yenni's Grammar.

Second class of arithmetic.—Greenleaf's National Arithmetic.

FIRST DIVISION.

English.—Catechism, Gould Brown's Grammar, Mitchell's Geography and Atlas, Kerney's Scripture History, compositions, declamation.

Latin.—Viri Romæ, Yenni's Grammar.

Greek.—Yenni's Grammar.

First class of arithmetic.—Greenleaf's National Arithmetic.

SECOND YEAR.

THIRD CLASS OF *GRAMMAR*.

English.—De Harbe's Catechism, Gould Brown's Grammar, Mitchell's Geography and Atlas completed, ancient history, compositions, declamation.

Latin.—Yenni's Grammar, — Exercises, Nepos's Lives, Fables of Phædrus.

Greek.—Yenni's Grammar, Xenophon's Anabasis.

Fourth class of French.—Otto's Grammar, De Fivas's Reader.

Second class of algebra.—Loomis's Algebra.

THIRD YEAR.

SECOND CLASS OF GRAMMAR.

English.—De Harbe's Catechism, modern history, compositions, declamation.

Latin.—Yenni's Grammar, written translations into Latin, Cæsar's Commentaries, Ovid's Metamorphoses.

Greek.—Yenni's Grammar, written translations into Greek, Xenophon's Cyropædia.

Third class of French.—Otto's Grammar, Otto's Reader.

First class of algebra.—Loomis's Algebra.

FOURTH YEAR.

FIRST CLASS OF GRAMMAR.

English.—De Harbe's Catechism, modern history, compositions, declamation.

Latin.—Yenni's Grammar, written translations into Latin, prosody, Sallust, Virgil's Æneid.

Greek.—Yenni's Grammar, written translations into Greek, Herodotus, Homer's Iliad.

Second class of French.—Otto's Grammar, Otto's Reader.

Third class of mathematics.—Loomis's Geometry.

FIFTH YEAR.

CLASS OF HUMANITIES.

English.—Modern history; compositions, especially poetical; declamation.

Latin.—Prosody; precepts of rhetoric; translations and composition, especially poetical; Livy, Cicero's Orations, Horace.

Greek.—Yenni's Grammar, written translations into Greek, Demosthenes's Olynthiæcs, Homer's Iliad.

First class of French.—Ahn's Course.

Second class of mathematics.—Loomis's Trigonometry, Loomis's Analytical Geometry.

SIXTH YEAR.

CLASS OF RHETORIC.

English.—Compositions, especially oratorical; declamation; precepts of rhetoric.

Latin.—Precepts of rhetoric; translations and compositions, especially oratorical; Tacitus's Agricola, or Germania; Horace, completed; Juvenal.

Greek.—Written translations into Greek, Demosthenes on the Crown, Sophocles's Œdipus the King, or Antigone.

German.—Ahn's Course.

First class of mathematics.—Loomis's Analytical Geometry completed, Loomis's Calculus.

SEVENTH YEAR.

CLASS OF PHILOSOPHY.

Class of mental philosophy.—Russo's Logic and Metaphysics, Liberatore's Ethics, lectures and disputations.

Class of natural philosophy.—Ganot's Physics, Peck's Mechanics and Cognate Sciences.

Class of chemistry.—Eliot and Storer's Manual, lectures and experiments, when, on the meritorious student, will be conferred the degree of A. B.

For the further degree of A. M. it will be required that the applicant shall have continued his studies in college 1 year, or studied or practiced a learned profession for 2 years.

COURSE OF STUDIES IN THE ENGLISH DEPARTMENT.

First year.—Catechism, grammar reviewed, history, composition, bookkeeping, arithmetic reviewed, algebra, declamation.

Second year.—Catechism, history, composition, rhetoric, declamation, bookkeeping, geometry, French.

Third year.—Catechism, history, composition, rhetoric, declamation, trigonometry, analytical geometry, German.

Fourth year.—Composition, declamation, logic, metaphysics, ethics, physics, calculus, chemistry,
when will be conferred the degrees of B. S.

In 1889 there were in the faculty of the college 16 officers and teachers. At the twenty-fifth annual commencement, June 17, 1889, 18 candidates received the degree of bachelor of arts, and 1 the degree of bachelor of science. During commencement week the play of Hamlet was given by the students of the college, and a "Scientific Exhibition" by the graduating class. Six prizes were awarded for the best thesis in Christian doctrine, for English composition, declamation, and reading. Medals, premiums, and honorable mention were awarded to 24 classes in the different branches of study.

Among the societies of the students are the "Sodality of the Immaculate Conception," the "Sodality of the Holy Angels," "St. Cecilia Choir," and "The Debating Society."

The College of the Holy Cross, a Catholic institution of high grade, located at Worcester, was incorporated in 1865, and has a corps of 15 instructors. Its President was invited to furnish its history for this report, but did not respond.

CHAPTER XVIII.

CLARK UNIVERSITY.

THE FOUNDER.

Clark University was founded by the munificence of a native of Worcester County, Massachusetts. It was—

not the outcome of a freak of impulse, or of a sudden wave of generosity, or of the natural desire to perpetuate in a worthy way one's ancestral name. To comprehend the genesis of the enterprise we must go back along the track of Mr. Clark's personal history 20 years at least. For as long ago as that, the idea came home with force to his mind that all civilized communities are in the hands of experts; that the man who has special and extensive knowledge on any given subject is the man whose verdict decides important points at issue and sways the opinion of the multitude. Looking around at the facilities obtainable in this country for the prosecution of original research, he was struck with the meagerness and the inadequacy. Colleges and professional schools we have in abundance, but there appeared to be no one grand inclusive institution, unsaddled by an academic department, where students might pursue as far as possible their investigations of any and every branch of science.

Mr. Clark went abroad and spent 8 years visiting the institutions of learning in almost every country of Europe. He studied into their history and observed their present working. He sought out the ancient shrines of scholarship, and informed himself respecting the very beginnings of educational movements. Indeed he had prepared in manuscript for his own use accounts of the various methods of instructing and educating the human mind in vogue from the time when learning began to be disseminated through the world. Thus the ideas respecting education which had long been working in his prolific mind were shaped and enriched by contact with the best thought of Europe and by a survey of the various methods of instruction in operation there.¹

It is his strong and expressed desire that the highest possible academic standards be here forever maintained; that special opportunities and inducements be offered to research; that to this end the instructors be not overburdened with teaching or examinations; that all available experience, both of older countries and our own, be freely utilized, and that new measures and even innovations, if really helpful to the highest needs of modern science and culture, be no less freely adopted; in fine, that the great opportunities of a new foundation in this land and age be diligently explored and improved.

¹ See "Clark University," by Howard A. Bridgman, in *Education* for December, 1889.

He has chosen Worcester as the seat of the new foundation after mature deliberation—first:

Because its location is central among the best colleges of the East, and by supplementing rather than duplicating their work he hopes to advance all their interests and to secure their good will and active support, that, together, further steps may be taken in the development of superior education in New England; and secondly:

Because he believes the culture of this city will ensure that enlightened public opinion indispensable in maintaining these educational standards at their highest; and that its wealth will insure the perpetual increase of revenue required by the rapid progress of science..

THE BOARD OF TRUSTEES.

As the first positive step towards the realization of these long-formed plans, Mr. Clark invited the following gentlemen to constitute with himself a board of trustees:

Stephen Salisbury, A. B., Harvard, 1856; Universities of Paris and Berlin, 1856-58; Harvard Law School, 1859-61; president Antiquarian Society since 1887.

Charles Devens, A. B., Harvard, 1838; Harvard Law School, 1840; major-general, 1863; judge of supreme court, 1857; United States Attorney-General, 1877-81; LL. D., Columbia and Harvard, 1877; judge supreme court since 1881.

George F. Hoar, A. B., Harvard, 1846; Harvard Law School, 1849; United States House of Representatives, 1868-76; United States Senate since 1876; LL. D., William and Mary, Amherst, Harvard, and Yale.

William W. Rice, A. B., Bowdoin, 1846; admitted to bar, 1854; United States House of Representatives, 1876-86; LL. D., Bowdoin, 1886.

Joseph Sargent,¹ A. B., Harvard, 1834; M. D., Harvard, 1837; London and Paris hospitals, 1838-40.

John D. Washburn, A. B., Harvard, 1853; Harvard Law School, 1856; representative, 1876-79; State senate, 1887; United States minister to Switzerland, 1889.

Frank P. Goulding, A. B., Dartmouth, 1863; Harvard Law School, 1866; city solicitor since 1881.

George Swan, A. B., Amherst, 1847; admitted to bar, 1851; member of Worcester school board since 1879; chairman of high school committee.

A charter was granted early in 1887. Land and other property that had been before secured by the founder was transferred to the board, and the erection of a central building was begun.

THE PRESIDENT AND HIS DUTIES.

In the spring of 1888 G. Stanley Hall, then a professor at the Johns Hopkins University, was invited to the presidency. The official letter conveying this invitation contained the following well-considered and significant expression of the spirit animating the trustees:

They desire to impose on you no trammels; they have no friends for whom they wish to provide at the expense of the interests of the institution; no pet theories to press upon you in derogation of your judgment; no sectarian tests to apply; no guaranties to require save such as are implied by your acceptance of this trust.

¹ Died October 12, 1888.

Their single desire is to fit men for the highest duties of life, and to that end, that this institution, in whatever branches of sound learning it may find itself engaged, may be a leader and a light.

The president, who was—

bred among the Franklin Hills of Massachusetts, stands in his own department, that of psychology, easily at the head of American scholars. He is now, perhaps, 45 years of age. After his appointment, in the spring of 1888, he was granted a year's leave of absence, with full salary, to visit European universities. He, too, has come back with a broadened horizon, and better equipped for his important work. His learning, coupled with his executive ability, without which no university president can be a real success in these days, qualifies him to take the helm, and his appreciation of Mr. Clark's great purpose is so sympathetic that the two will labor in the utmost harmony to secure the desired ends. Dr. Hall will direct the work of the department of psychology, and will continue to edit the *American Journal of Psychology*, a periodical which has attained high fame abroad as well as in this country.¹

The duties of this office were thus defined by the trustees May 23, 1889:

The president of the university shall consult frequently with the trustees on all matters which concern the welfare of the university, and attend the meetings of the board. He shall confer with each instructor concerning the development of his department, determine the duties and authority of each, and preside at the meetings of the faculty. He shall be the authorized medium of communication between the board of trustees and the officers of instruction, individually and collectively, in all matters involving the administration of the university. The enactments of the board concerning instructors and their work, and all requests, complaints, and proposals from the faculty to the trustees, shall be made known through him. He shall exercise or provide such superintendence over buildings, apparatus, books, and other property as will secure their protection and appropriate use. Expenditures must not be ordered by any instructor of the university without his previous consent or the express authority of the board.

PROFESSORS AND SPECIAL DEPARTMENTS.

The plans of the university had so far progressed that work was begun in October, 1889, in mathematics, physics, chemistry, biology, and psychology.

The work of the university outlined for the opening year was stated as follows:

PSYCHOLOGY.

The president of the university has been appointed temporary professor of psychology, and will continue, so far as other engagements will permit, to direct the work of this department as formerly at the Johns Hopkins University. By instruction or seminars, or by careful personal conference and guidance to the best literature, and with the aid of Dr. Sanford, attention will be directed to the following topics:

The general properties of the nervous substances; the psycho-physiology of each of the special senses and their defects; the perception of time and space; the time sense; the psycho-physic law; mental images (morbid and normal) and their associations; the leading topics in the psychology of insanity, especially aphasia, illusions and hallucinations, melancholia, neurasthenia, epilepsy, hysteria, mania, and

¹ Education, December, 1889.

paralysis; instinct; the psychology of language; myth, custom, and belief anthropologically considered; hypnotism, and the psychological side of the history of philosophy, especially the Greek, German, and English systems.

Dr. Hall will also direct the work of a few students of Class III (below) in the history, methods, and organization of education, elementary, intermediate, and superior. On these topics he will give a special course of lectures during a part of the year.

Opportunities in psychology will be supplemented by work in the biological department and especially by that of Dr. Donaldson. A well-equipped laboratory of apparatus for research in the various departments of experimental psychology will also be opened in October.

Opportunities for prompt publication of meritorious investigations, together with digests of current literature in this department, will be found in the *American Journal of Psychology*, which is published under the editorial care of Dr. Hall.

Henry H. Donaldson has been appointed assistant professor of neurology. Dr. Donaldson graduated from Yale College in 1879. After spending a year at the Sheffield Scientific School and another at the College of Physicians and Surgeons in New York City he was appointed a fellow of Johns Hopkins University for 2 years, receiving the degree of doctor of philosophy there in 1885. A year and a half was then spent in Europe, chiefly with Professors Gudden at Munich, Forel at Zurich, and Golgi at Turin, and on returning he was appointed associate in psychology in the Johns Hopkins University.

Dr. Donaldson will give instructions in the finer anatomy of the central nervous system in man, in the histology of the sense organs in the vertebrate series, and the localization of function in the brain, together with such other topics as may serve to facilitate study in these lines.

Lectures, laboratory work, conferences, etc., will be offered.

Edmund Clark Sanford, who has been appointed instructor in psychology, graduated from the University of California in 1883. He has since spent 4 years at the Johns Hopkins University, where he was appointed fellow in psychology in 1887, and received the degree of doctor of philosophy the following year. The past academic year has been spent as instructor in the undergraduate department of the Johns Hopkins University and in editing, under Dr. Hall's supervision, *The American Journal of Psychology*.

Dr. Sanford will give the two following special courses, focusing upon psychometry and psychological optics:

First half-year.—The physiological psychology of vision; monocular vision, color perception, contrast, etc.; binocular vision, stereoscopy, and the horopter, perception of space, nativism, and empiricism. Chief authorities, Helmholtz, Hering, Wundt. The aim will be to demonstrate all the important experiments mentioned in the course with suitable apparatus.

Second half-year.—The application of time measurements to psychology; simple and complicated reaction times, personal equation, association times, and time sense.

Dr. Sanford will also assist Professor Hall in the work of instruction and in the direction of the psycho-physic laboratory, seminary, etc.

The laboratory of the department will be open for two kinds of work. The first, demonstrational and intended to familiarize students with psycho-physic method and apparatus; the second, advanced and intended for those already fitted for original research.

Other instruction.—Dr. Boaz will lecture upon the general subject of anthropology, including craniometry and physical anthropology generally, and method of studying primitive people with reference to his own work among Indian tribes and Esquimaux, but with special attention to the psychological side of myth, custom, and belief.

Mr. Burt will lecture on ancient philosophy, psychology, and ethics.

Dr. Cook will lecture on modern philosophy, psychology, and ethics.

Dr. MacDonald will lecture on education, its history, theories, and institutions, or applied and practical psychology in its broad sense, including social reform; temperance, prison discipline, reformatory institutions, divorce, asylums, training of detectives, criminal anthropology, personal hygiene, and regimen.

Dr. Taber will instruct in symbolic logic, including the logic of relatives and the calculus of probabilities, with special relation to the calculus of De Morgan and Boole, and the developments of Charles Pierce, Shroeder, Ladd, Franklin, and Mitchel, and logical machines. As this work throws light upon the processes of mathematics and the logic of algebra and of notation and numbers, it is recommended to students of mathematics, as well as to students of psychology.

Dr. Hodge will give a few lectures upon the morphological changes in nerve cells accompanying various forms of stimulation.

Opportunity for publication of original memoirs is offered in the *American Journal of Psychology*, now published at the university.

Mr. C. A. Orr has been nominated as psychologist and anthropologist to the Government astronomical expedition, which sails in October for southwestern Africa, under the direction of Professor Todd. Mr. Orr is a graduate of Michigan University, and has spent 2 years in postgraduate work at the Johns Hopkins University.

The work of the psychological department is intended for the following classes of students: Those who desire to teach philosophy in any or all of its departments; physicians or medical students who wish to become specialists in the treatment of insanity or of diseases with nervous complications; those who desire to study education professionally (and who are advised to give most of their energy to psychology, which is its chief scientific basis, pedagogy being a field of applied psychology).

Some of the special topics into which the work above naturally falls can be attended as a special course by students of other departments. Thus, students of biology or pathology may follow the histological course of Dr. Donaldson; students of classics may follow the course in Greek philosophy; of morphology, the lectures on instinct; of astronomy, the lectures on reaction time and the personal equation.

BIOLOGY.

Dr. C. O. Whitman has been appointed professor of biology. Dr. Whitman graduated at Bowdoin College in 1868; was principal of Westford Academy from 1869 to 1872; submaster in the English high school, Boston, from 1872 to 1875; a pupil of Louis Agassiz at Penikese in 1873; studied with Professors Lenckart, Schenck, and Weidemann in Liepsic from 1875 to 1878, where he also took his degree of PH.D. Returning to the English High School, Boston, in 1878, he was in the following year appointed fellow of Johns Hopkins University, and was later professor of zoölogy in the University of Japan from 1879 to 1881. In the year 1882 he occupied, at the invitation of Professor Dohrn, a table in the Naples zoölogical station. From 1883 to 1886 he carried on his studies on the embryology of fishes with Alexander Agassiz at the Newport Marine Laboratory and at the Museum of Comparative Zoölogy at Harvard. Since 1886 he has been director of the Allis Lake Laboratory, Milwaukee, during the years 1888-89 of the Marine Biological Laboratory of Wood's Holl. Dr. Whitman is editor of the *Journal of Morphology* and of the microscopical department in the *American Naturalist*.

In this department Warren P. Lombard was appointed assistant professor of physiology in August, 1888.

Dr. Lombard graduated from Harvard College in 1878, and from Harvard Medical School in 1881. In 1881-82 he was prosecutor and lecturer in the College of Physicians and Surgeons in New York City, and for the next 3 years, 1882-85, attended lectures and was engaged in research work in Germany, chiefly in the laboratory of Professor Ludwig, in Liepsic. The next 3 years were devoted to research and to the duties of lecturer and assistant in physiology at the College of Physicians and Surgeons and elsewhere. The past year was spent in the laboratories of Professors Dastre and Darsonval, of Paris, Professor Mosso, of Turin, and elsewhere.

Work in this department will be conducted with the aid of lectures, laboratory, conferences, etc., and will cover the physiology of digestion, secretion, respiration, circulation, the nerves, muscles, and senses. The laboratory will be well furnished with instruments and other appliances for investigation in each of these special fields.

A lecture course extending through 2 or 3 years, in comparative embryology, will be offered. The leading topics in the early part of the course will be as follows: The genesis of the ovum, the phenomena of maturation, fecundation, etc., the theories of heredity founded on these phenomena, the phenomena of cytokinesis and karyokinesis, cytological terminology, the different types of cleavage of the ovum, experimental researches in cleavage, modes of gastrulation, formation of the embryo in vertebrates and invertebrates, a comparison of the larval and the fetal type of development. Aquaria and ponds will be placed as early as possible at the service of those connected with the laboratory, and opportunities for the investigation of marine life will be given at the marine biological laboratory at Wood's Holl.

Facilities for publication will be offered in the *Journal of Morphology*, which is published under the editorial direction of Dr. Whitman. An artist will be permanently connected with this department.

F. Mall has been appointed adjunct professor of anatomy. Dr. Mall graduated from the University of Michigan in 1883, where he received the degree of M. D. He studied 1 year with Professor Kühne at Heidelberg, and 2 years with Professors Weigert, His, and Ludwig in the University of Leipsic. Since 1886 he has been, successively, fellow, instructor, and associate in pathology in the Johns Hopkins University.

Dr. Mall will offer two courses, one in history, and one in vertebrate embryology. Each of those may be divided into two courses, one theoretical and practical for beginners, three times a week, in the afternoon, and one consisting of laboratory work (9 a. m. to 5 p. m.) for advanced students.

Dr. J. Playfair McMurrich has been appointed docent in biology. Dr. McMurrich graduated B. A. from the University of Toronto in 1879, and held the position of assistant in the biological laboratory there for the succeeding 2 years, at the same time pursuing a course of study in medicine. He was appointed professor of biology in the Ontario Agricultural College, at Guelph, Canada, in 1882, which position he held until 1884, when he entered the Johns Hopkins University as instructor in osteology, and has for the past 2 years been professor of biology at the Haverford College.

Herman C. Bumpus, who has been appointed fellow in biology, graduated from Brown University in 1884, where he pursued a post-graduate course in zoölogy, and acted as instructor under Professor Packard. From 1886 to the present time he has been professor of biology at Olivet College, Michigan.

PHYSICS.

Albert A. Michelson has been appointed acting professor of physics. Dr. Michelson graduated at the United States Naval Academy in 1873, where he afterward served as instructor in physics and chemistry for 4 years. He was later attached to the Nautical Almanac office in Washington. For 2 years, beginning in 1880, he worked in Europe under Helmholtz, Quincke, Mascart, and Cornu. On returning, he resigned his commission of master (now called lieutenant) in the Navy, and became professor of physics in the Case School of Science, Cleveland, Ohio, where he has since remained. In 1888 he was awarded the Rumford medals for his researches on the velocity of light. Dr. Michelson is a member of the American Academy of Science, corresponding member of the British Association, vice president of the American Association for Advancement of Science, etc.

Professor Michelson will give a course of illustrated and experimental lectures in physics, extending through 2 years. These will treat the chief topics in this department, and will be sufficiently advanced for students intending to make physics a specialty, and will be interspersed by examinations and conferences.

This course will be supplemented by a series of lectures or readings in theoretical optics, electricity and magnetism, or in thermodynamics of a more informal nature. Students with a fair knowledge of integral and differential calculus will have no difficulty in following this course.

A graded course of laboratory instruction will be offered for practical acquaintance with special methods. Dr. Michelson will strive, by advice and example, to encourage a spirit of diligent investigation and original research, particularly in those intending to find their life work in this department.

CHEMISTRY.

The organization of this department was completed in October, 1889.

A large laboratory of about 50 rooms was ready for occupation, and Prof. Arthur Michael was appointed professor of chemistry. Professor Michael is a native of Buffalo, and was educated in this country until 1871, when he went to Europe and spent 8 years in the study of chemistry, chiefly with Bunsen at Heidelberg, Hofmann of Berlin, and Wurtz of Paris. Since 1881 he has been professor of chemistry at Tufts College, where, mainly at his own expense, he has equipped a research laboratory, probably unsurpassed in this country in its facilities for investigation. He is the author of numerous memoirs, and has an enviable reputation in Europe. He is a member of the American Academy of Sciences, and has lately returned with his wife from a 15 months' tour around the world.

Mr. Charles K. Swartz has been appointed university fellow in chemistry. Mr. Swartz is a native of Baltimore, and a graduate of Pennsylvania College. He received a second degree at Johns Hopkins University in 1888. During the past year he has been studying the physical side of chemistry in Germany.

MATHEMATICS.

Appliances for this department are also liberally ordered. "The staff of each department will be further extended so as to embrace 'docents' and fellows. By the former term is meant students who are granted a private room and peculiar facilities for work in a given line, in return for which they may give fifteen or twenty lectures during the year. They will also receive from two to four hundred dollars a year, according to the service rendered."

The organization of all of the above and of other departments will be gradual, and the foundation period of the university will cover some years.

Apparatus is being extensively ordered of the best makers in this country and in Europe, chiefly from those who devote themselves to the special class of apparatus in which they excel.

The instructors in each department will make timely provision for all their needs, and are also requested to furnish lists of desired books and periodicals.

METHODS.

Besides field work, excursions to institutions public and private, coaching and cram classes, examinations, conferences, and other modes by which knowledge now seems best imparted and retained, the following educational methods will probably be prominent.

Seminaries.—These are stated, perhaps weekly, meetings, often in a department library, for joint, systematic, but conversational work, under the personal direction of the professor, in some special chapter of his subject. Here the results of individual reading are reported for the benefit of all; views are freely criticised; new inquiries, methods, comparisons, standpoints, etc., suggested. From the mutual stimulus thus given many important works have proceeded, and the efficiency of universities, especially in Germany, where seminaries were first generally introduced, has been greatly increased.

Laboratory work.—For beginners this was from the first the best of all forms of apprenticeship, bringing student and professor to a far closer and mutually stimu-

lating relation. Here the manipulation of apparatus is learned, each well-chosen piece of which is an obvious epitome of long lines of research; processes are criticised, results obtained by other investigators are tested, methods are discussed and perfected. The modern laboratory has thus become an unexcelled school of logical mental discipline, from which is developed, as its best product, that rare independence in research which is the consummation of scientific culture.

Lectures.—The trustees desire that each instructor, of however few students, should prepare and deliver regular lectures, with diagrams, illustrative apparatus, and references to standard text-books, and the best current literature upon each topic. Advanced students and instructors will also be encouraged to supplement the work of the professors by giving special lectures and courses. Public lectures will from time to time be given.

CLASSES OF STUDENTS.

The following classes of students will be admitted:

I.—*Independent students.*

This class includes those who have already taken the doctorate or other academic degrees in this country or abroad, and others of sufficient training who have time that may be devoted to particular lines of study or research.

For competent men of this class individual arrangements may be made, and an independent room, and even special apparatus and books provided that they may pursue their investigations, either alone or with the aid and counsel of the instructors, to the best advantage.

Conditions under which a few of the most advanced students of this class can be granted the *venia docendi*, as lecturers or docents, are under careful consideration.

It is hoped that some of the permanent instructors of the university may be recruited from this class.

It is probable that a few of these mature students can be received, not only in the five departments named above, but in others soon to be organized, and in the development of which they may coöperate.

II.—*Candidates for the degree of doctor of philosophy.*

Those qualifying for this degree matriculate early in the fall, after suitable tests, which also aid in determining when they can be admitted to the final examination.

The full course provided for this class of students will be 3 years, but admission to advanced standing at the outset is possible, and those found to be qualified may be allowed to take the doctor's examination in 2 years, or even 1.

It is to the needs of these students that the lectures, seminaries, laboratories, and collections of books and apparatus will be especially shaped, and no pains will be spared to afford them every needed stimulus and opportunity. It is for them that the fellowships and scholarships are primarily intended, although any of these honors may be awarded to students in Classes I or III.

III.—*Special students not candidates for a degree.*

This class includes those who may desire to devote themselves exclusively to one or more of the special branches—mathematics, physics, chemistry, biology, or psychology—but who do not care to matriculate or become candidates for a degree.

These students, provided they satisfy the heads of departments of their training and competency in one subject, in which they must be advanced (although they may be less so, or even beginners, in other subjects), may be allowed entire freedom in their choice and combination of studies, and, as special students, may enjoy all the privileges of the university.

IV.—*Medical students.*

The university offers special facilities in those fundamental disciplines upon which the study of medicine in all its departments now rests.

Thus students of sufficient preliminary training can be admitted into the departments of chemistry, biology, anatomy, physiology, and neurology, and receive here the purely scientific part of a medical education.

V.—Preliminary candidates or undergraduates.

Non-university students of less special, or less advanced standing than the above four classes, who are nearly, but not quite, qualified to become candidates for the degree of doctor of philosophy, may also be received.

Students of this class must for the present have completed the work of the first 3, or at least of the first 2, years of a regular undergraduate course in a college of good standing, or the equivalent thereof. They must satisfy the authorities of the university that they can proceed to the degree of A. B. in 1 year and contemplate advancing to a higher degree. The privileges and status of these students will be more fully defined later. They may be elected to scholarships, but not to fellowships. "No man is wanted at Clark University who does not love science for its own sake, and not for its marketable aspects. The keynote to all the projected work is original research, or to quote Dr. Hall again, the central object is to 'extend the frontier of human knowledge.'"

FELLOWSHIPS AND SCHOLARSHIPS.

In addition to all previous gifts of the donor, and apart from the permanent funds of the university, full tuition of \$200 each for thirty meritorious students will be paid into the treasury. For eight of these students, thus freed from tuition, Mr. Clark has also established fellowships yielding each holder \$400 per annum, and eight more fellowships yielding each holder \$200 per annum. These, with eight free scholarships as above provided, will be known as the Jonas G. Clark scholarships and fellowships respectively.

Mrs. Clark has established two fellowships yielding \$400 each, and two fellowships yielding \$200 each per annum. These, with the two remaining scholarships, will be known as the Mrs. Jonas G. Clark fellowships and scholarships respectively.

These six latter are especially provided for the department of psychology, while the twenty-four presented by Mr. Clark are to be distributed among the other four departments at the discretion of the president and faculty.

LOCATION.

The university is situated in Worcester, the third city of New England in size, with 80,000 inhabitants. It is 1 hour westward from Boston by rail, and 5 hours from New York City. Central among the best New England colleges, the location is most favorably chosen for attempting the next step in the higher university development of the country.

Worcester is also the seat of the following institutions of an educational character.

The American Antiquarian Society, an institution of national character and repute, organized in 1812, with a library of 85,000 volumes, possessing funds and collections, and issuing publications of its own.

The Worcester Free Public Library, containing about 75,000 volumes and receiving about 250 periodicals.

The Worcester Polytechnic Institute, incorporated in 1865, with three large and well appointed buildings, 15 instructors, and a 3 years' course mainly in the sciences and their application to the practical arts.

The Worcester Lyceum and Natural History Association, incorporated in 1866, and containing extensive local collections.

The College of the Holy Cross, a Catholic institution of high grade, incorporated in 1865, and with a corps of 15 instructors.

In addition to these may be mentioned a law library of 12,000 volumes; a medical library of 8,000 volumes; a State normal school with a 2 years' course, 8 instructors, and about 200 students; 1 high school; the Highland Military Academy, founded in 1858, with 7 instructors; the Worcester Academy, a private institution, founded in 1874; and several other libraries, societies, and educational institutions.

The university is located on an elevated slope in the western part of the city about a mile from the central station. Here on the 22d of October, 1887, with impressive ceremonies the corner stone of the main building was put in its place.

Before the charter was applied for, in January, 1887, about 9 acres of land had been bought, and to this single lot other tracts near by have since been added.

BUILDINGS.

A plain, substantial, and well-appointed central building, 204 by 114 feet, 4 stories high, and with superior facilities for heating, lighting, and ventilation, has been constructed of brick and granite, and finished throughout in oak.

A chemical laboratory, designed after consulting many experts and plans of recent European buildings, and containing about 50 rooms, was completed in the autumn of 1889. It is practically fireproof and is probably not surpassed by any similar structure in the country.

The foundations of a still larger department building are laid.

TUITION.

The charge for tuition, giving all the privileges of the university, but not covering laboratory fees, is \$200 per annum.

The following extract, having reference to the history and aims of Clark University, is taken from President Hall's inaugural address, October 2, 1889:

Our history begins more than 20 years ago in the plans of a reticent and sagacious man whose leave we can not here await to speak of, who in affluence maintains the simple and regular mode of life inbred in the plain New England home of his boyhood; plans that have steadily grown with his fortune and that have been followed and encouraged with an eager and growing interest which extended to even minor items by the devoted companion of his life. Besides a large fund already placed to our account, he has given his experience and unremitting daily care, worth to us large sums in economies and resulting in well appointed buildings, a solidity of materials and a thoroughness of workmanship which I believe are without a parallel of their cost and kind in the country. Not only in the multifarious work of the university office, its methods of estimates, orders, bookkeeping, of individual accountability for all books, apparatus, supplies, and furniture, but in the larger questions of university polity without and effective administration within, in the definition of duty

of each officer, the strict subordination and the concentration of authority and responsibility sure to appeal to all who have the instinct for discipline, and which are exceptionally needful where the life of science is to be so free and the policy so independent, in the express exemption, too, of all instructors who can sustain the ardors of research from excessive teaching and examinations, in the appointment of assistants in a way to keep each member of the staff at his best work, and to avoid the too common and wasteful practice in American universities of letting \$4,000 men do \$400 work, in the ample equipment of each department, that no force be lost on inferior tools—in all these and many other respects the ideal of our founder has been to make everywhere an independent application of the simplest and severest but also the largest principles of business economy.

* * * * *

A word so characteristic here that it might stand upon our very seal is concentration. Of this our founder, in declining to scatter his resources among the countless calls from individuals, institutions, and causes from excellent to vicious, and refusing us as yet, in the one work he has set out to accomplish, no needed thing, sets an example. We have selected a small but closely related group of five departments, and shall at first focus all our means and care to make these five the best possible. Neither historical origin nor the term university have anything to do with the completeness of the field of knowledge. The word originally designated simply a corporation with peculiar privileges and peculiarly independent to do what it chose. We choose to assert the same privilege of election for ourselves that other institutions allow their students, and offer the latter in choosing their subjects a larger option between institutions. The continental habit of interuniversity migration also on the part of students, if once adopted here, would, no doubt, stimulate institutions no less than it has stimulated competing departments in the same university. If our elementary schools are inferior to the best in Europe, and if our fitting schools are behind the French lycée, the German gymnasium, and the great English "nine," it is our universities that are comparatively by far the weakest part of our national system. The best of these best know that fifty or a hundred instructors can not do the work of three hundred and fifty; that they can not hope at present to rival European governments which erect single university buildings costing nearly \$4,000,000 each, as at Berlin and Vienna, nor equal the clinical opportunities of large European cities with poorer populations and more concentrated hospital systems. Our strongest universities are too feeble to do justice to all the departments, old and new, which they undertake; our institutions are also too uniform, and every new departure of the stronger ones is copied and thus often enfeebled by the weaker ones. When they specialize among the fields of academic culture, doing well what they do but not attempting to do everything, our American system may yet come to represent the highest educational needs of the country. In contrast with the present ideal of horizontal expansion and the waste of unnecessary duplication, we believe our departure will be as useful as it is new.

Again, concentration is now the master word of education. In no country has the amount of individual information been so great, the range of intelligence so wide, the number of studies attempted by young men in colleges and universities so large for the time and labor given to each, the plea for liberal and general, as distinct from special and exclusive, studies been so strong. This is well, for general knowledge is the best soil for any kind of eminence or culture to spring from, and because power, though best applied on a small surface, is best developed over a large one and not in brains educated, as it were, in spots.

At the opening of the university the academic staff numbered 14, all of them specialists and selected with extreme care. Only 40 students had been accepted, it being the aim of the institution not to hamper its professors with too much teaching, and to emphasize investigation

rather than direct instruction. A select body of students of guaranteed scientific training and ability and approved power to teach will be gradually gathered, on whom will be conferred individually the rank and title of "docent," who will be available as professors or assistant professors in colleges.

The Boston Herald thus refers to the special work of Clark University:

If Stevens Institute at Hoboken and the Columbia School of Mines in New York are excepted, Clark University is the only institution for advanced education in this country which proposes to be a school for specialists. Johns Hopkins University is specialized in many departments, but the institution at Worcester will be devoted to special studies entirely, so that it may be said to be engaged wholly in researches and investigations that bring the highest results of learning into practical contact with industrial life. We have needed in America an institution which smooths the way for men like Fulton and Morse and Edison, which helps men to think and discover and invent, which gives a special education for this purpose; and it is precisely at this point that Clark University takes hold of practical affairs. Our American universities have such a wide field to occupy that they are no longer the homes of specialists, and Clark University is almost the first of our great special schools.

The following by Prof. Dr. Albrecht Peuck, of the University of Vienna, appeared in a leading daily journal of Vienna, Austria:

* * * To afford the highest academic culture for all time and to offer special opportunity to investigation, Mr. Jonas G. Clark devotes a stately sum and founds in Worcester, Mass., a university named for himself, to the head of which he has called one of the most prominent American scholars, the psycho-physiologist, Stanley Hall, as director. We have here a great undertaking, that, boldly as it is planned, is being executed with all care and a wide survey of experience. For the problem was to found not merely a new university, but one of first rank. The experience of the Old and New World must be utilized. Stanley Hall therefore began his activity by undertaking a journey to understand the constitutions of the chief universities of the world. He visited the most important institutions of America and nearly all in Europe, compared the different methods of instruction, and also sought quietly among the lands of European culture, fit teaching talent.

Thus the organization of the university was intrusted to a man of recognized ability, and he had a full and free hand. But one point was from the very first kept in view by the founder, and that with justice, viz, that the instructors should be able to devote themselves fully and exclusively to their scientific activity. In the foundation letter it is said the professors must not be overburdened with teaching and examinations—as is in fact the case in many (especially medical) departments in Europe. Mr. Clark provided sufficient means to make the professors pecuniarily independent of this overburdening, as well as of all unscientific outside occupations.

The 8 curators finally, who, jointly with Mr. Clark, worked out the university statutes, declare that they expect only of the university that it shall prepare men for the highest duties of life, and that neither personal nor professional interests be respected.

It may already be said that under such condition the published programme of the university awakened great interest. It breaks with the traditional division of science into 4 faculties; it recognizes only individual departments, thereby obviating a truly oppressive limitation, diametrically opposed to the spirit of the university which has grown up in Europe, causing students of the medical and philosophical (or scientific) faculty to be as far apart as if they belonged to departments internally distinct. Indeed, many points show already that Hall would amalgamate the study of medicine in the most intimate way with that of pure science. He himself will lecture on psycho-physiology and from the needed scientific standpoint.

Clark University is not to be chiefly an institution to develop officials for the State, but first of all, a school for investigation. The methods of instruction are most allied with those which have gradually been developed in the natural-history departments of the great German universities.

It is significant that the programme does not place lectures first among the means of instruction, but last. Seminaries and laboratories are first considered. The departmental professors have assistants at their side to aid them in the training of students, to give special courses and devote themselves particularly to novitiates. Besides this, excursions of different kinds are contemplated. In general, the endeavor is to bring student and professor into constant contact and particularly that no instructor have too many students.

Herewith a point of the utmost importance is designated, for nothing facilitates instruction more than the fact that the instructor can devote himself to his pupils, and nothing is more deplorable than when lectures and demonstrations must be given to an audience of hundreds; the individual gets precious little. This, I believe, is generally recognized. European boards of instruction have often considered a limitation of the number of hearers at lectures and demonstrations, but this will be feasible here only when individual students' fees cease to constitute a very essential income of the respective professors. North American students do not have so unitary, nor also so one-sided a preparation as our gymnasium affords, and Clark University, with justice, does not exclude from its courses those who have not enjoyed a sharply defined preparation. Its students are divided into different classes. It receives beginners who are still busied with general studies, finishing their preliminary training, and special students seeking their doctor's degree. There are also independent students. The latter embrace a class essentially new, i. e., students who have finished their professional studies but desire to enjoy the facilities of the university, and particularly the counsel of the professors in scientific work. To these advanced students special facilities are offered, and they are also to be developed as instructors. Medical students, and finally students who have received no degree, make each a class by themselves. Well endowed as the university is to be, its courses are not gratis, but, according to European ideas, are pretty dear, viz, \$200 a year. The university enjoys already, however, from the wife of the founder, 30 free and remunerative positions for students, which are not merely given to poor students, but are primarily designed as honors. This also is an infraction of customs deeply rooted in European institutions; with us by means of multifarious stipends study is made easy for impecunious students more often than for men of the middle classes, who, while they do not have abundant means, can not well bring a testimony of their poverty.

A university can not spring into existence perfect at once. Clark University begins at first with a small circle of lectures, specifically in mathematics, chemistry, physics, biology, and psychology. For each of these departments able professors and assistants are already secured, and it may be cited as a pleasing recognition of German science that most of these instructors have made or finished their studies in Germany.

Clark University was scarcely more than a name when the above report was prepared in the autumn of 1889. After a vigorous life of two years, and the accomplishment of some excellent work, it is possible to speak with more definite knowledge of its fundamental features. These may be stated as follows:

1. It is the only institution in the country devoted exclusively to post-graduate students. No undergraduates are received on any terms, and those graduates who apply are so carefully scrutinized and selected that but a small percentage of those seeking admission have been

received, although there are no formal examinations; thus its numbers must be always small. Moreover, many students would entirely defeat its plan.

2. For the few select men received, everything possible is done; books and apparatus are bought, and often a private room is provided for each man, and his work receives the constant daily guidance and direction of the professors and instructors. The methods of work are thus individualized to an extent which constitutes one of the chief features of the university.

3. Every man connected with the university is expected, during the year, to give one or more courses of lectures upon some special subject in his field. These lectures, perhaps but two or three in number, represent his work for the year at the university and are generally as much attended by professors as students, and are as helpful to them.

4. The educational character of the university is peculiar, first, in that it has two instructors and publishes a journal devoted to educational progress in methods, organization, building, etc., and especially in embracing not only the public school and lower grades but university work, policy, and methods. Secondly, it is to a great and increasing extent a group of seminaries and laboratories for the training of professors, the great majority of those who have gone out during the first two years of its existence now filling honored academic chairs.

5. The university is thus largely devoted to research, in the conviction that quite apart from, and in addition to the value of original contributions to the sum of knowledge, the attitude of investigation is one of the chief features and secures the most valuable type of education demanded by modern life.

6. This policy has required on the part of the founder and the board of trustees, who are not only unanimously in favor of it but have decided to commit themselves to it irrevocably, the rare insight, courage, and self-sacrifice involved in largely renouncing all income and spending an amount of money per man which constitutes of itself one of the most marked features of the university.

7. As the resources of the university are in process of development, the policy of focusing them all upon a few leading and closely related subjects, and refusing to establish new departments while anything needful remains undone for those already established, is another chief feature of the university.

In the field thus outlined Clark University has already won an enviable repute throughout the world of higher education. Since its opening day it has continued constantly to increase its influence and usefulness, until at the present time it has larger numbers than ever before, and gives promise of rendering most efficient aid in increasing the stores of human knowledge.

CHAPTER XIX.

HIGHER EDUCATION FOR WOMEN.¹

Before 1836 Massachusetts had given a charter to but two schools for girls only, Ipswich Academy in 1828, and Abbot Academy in 1829; the former had no endowment to secure its permanence and neither was designed exclusively for the higher education. The institution chartered as Mount Holyoke Seminary, February 11, 1836, and as Mount Holyoke Seminary and College, March 8, 1888, was the first one incorporated with the design to secure permanent facilities for the higher education of young women in the same way that colleges for 200 years had secured these advantages for young men. Embodying this idea it rose as a monument for the past and a promise for the future; from this point of view the history of the two centuries before it was founded is yet to be written; for while we have modern histories, political, philosophical, and educational, we still lack one that duly takes into view the education of woman. And yet to understand the history or to appreciate the work of pioneer institutions it is necessary to get some idea of the previous condition of education for women and to glance at the influences that shaped the course of education in general.

The early settlers of New England, zealous for religious freedom, promptly provided for the college training which they claimed necessary to perpetuate "an able and learned ministry;" for grammar schools to fit young men for college, and primary schools where all children must be taught to read, "lest Satan should keep men from the knowledge of the Scriptures."

Within 30 years from the landing at Plymouth, by the founding of Harvard College and by the school laws of 1642 and 1647, was laid the foundation of our entire educational system, with its three grades of schools essentially as they now exist.

Since the work of the grammar school was to prepare students for college, and the design of the college was to train men for the ministry, not many were found in either grade who had not that profession in view. Obviously colleges and grammar schools were not for girls. How was

¹ This sketch, with slight changes, forms the introductory chapter of the "History of Mount Holyoke Seminary," by Mrs. Sarah D. (Locke) Stow, published in 1887, and is kindly furnished by the author as introductory to the history of higher education for women in Massachusetts.

it with the primary grade? The law required the instruction of "all children" and the support of schools for "children." Girls were not mentioned. However it may have been at first, town histories show that during most of the eighteenth century girls did not ordinarily attend the public schools. There seems to have been no controversy on the subject. Their attendance was not thought necessary. At home, or in private schools kept by dames, they were taught to read and sew. It was thought as important for them to read the Bible as it was for boys. The reading book, in school or out, was the New England Primer. It contained the shorter catechism, which all children were required to commit to memory from beginning to end. Further learning than this girls were not supposed to need. Some learned to write; but when post-offices were few—and in 1790 there were but 75 in the country—correspondence was limited, and women in common life had little use for the pen. While everything worn in the family must be produced by the family, the education required by girls generally was not to be gained at school, and it may be that they were as well fitted for the part they were expected to act in life as boys for theirs. Their equal familiarity with the Bible and catechism prepared women to receive with as much profit as men the intellectual and moral training afforded by Sabbath discourses, which taxed the reasoning powers of all who heard.

The circumstances of the colonists gradually led to a general decline in education. For a generation or more before the Revolutionary war there is evidence that, while all could read, there were people of respectability and influence throughout the country who could not write. A large part of the wills left by men, some of whom had considerable property, and a larger part left by women, were signed with a cross. Early deeds in registrars' offices show that in many cases the wives of distinguished men were unable to write their own names.

The period of the Revolution was not favorable to improvement in this respect; and at its close there are said to have been ladies of high standing in Boston who could not read. But a new era in the education of women soon dawned. Previously, public schools, with rare exceptions, had been taught by "masters." In Northampton, before the war, farmers often taught English schools in the winter at from \$4 to \$5 a month, and boarded themselves at home ("History of Hadley," p. 426, note). After the war young men found other occupations more lucrative, and women began to be employed as teachers in the summer schools. Girls now began to attend. In many places it had been an unheard of thing for girls to be instructed by a master, and some towns were slow in allowing a change.

Boston did not permit them to attend the public schools till 1790, and then only during the summer months, when there were not boys enough to fill them. This lasted till 1822, when Boston became a city ("Quincy's Municipal History of Boston," p. 21). An aged resident of Hatfield used to tell of going to the schoolhouse when she was a girl and sitting on

the doorstep to hear the boys recite their lessons. No girl could cross the threshold as a scholar. The girls of Northampton were not admitted to the public schools till 1792. In the Centennial Hampshire Gazette it was stated:

In 1788 the question was before the town and it was voted not to be at any expense for schooling girls.

The advocates of the measure were persistent, however, and appealed to the courts; the town was indicted and fined for this neglect. In 1792 it was voted by a large majority to admit girls between the ages of 8 and 15 to the schools from May 1 to October 31. They sometimes went to other towns to obtain the advantages of public schooling. It was not till 1802 that all restrictions were removed.

As late as 1828, a certain Otis Storrs was asked to take the town school in Bristol, Rhode Island, and allow girls to share his instructions. "Before this," the record adds, "girls did not go to the public schools" ("History of Public Education in Rhode Island," p. 294). The newer towns were apt to be in advance of the older ones, and if unable to support additional schools for girls, often allowed them to attend with boys.

In 1789, Massachusetts passed a law indicating advance in several directions. Towns were authorized to establish school districts. Arithmetic, orthography, and the English language were to be taught in the common schools in addition to reading and writing. "Children in the most early stages of life" were to be admitted. One public school in a town, which was all that some towns had, would no longer suffice. In the need of more teachers, women were employed in schools where, besides morals, the requirements were only reading, "and writing if contracted for." Previously the law had recognized only masters as teachers. Hence only masters could collect wages. When women taught, their payment had been a voluntary matter. In the phrase "master or mistress," in the new law, is found the first legal recognition of woman as a teacher. It was not much money that she could collect. Twenty years later we read of teachers that received "\$1 a week and the privilege of working for board and earning another dollar." In Buckland, 1799, with the wages of 24 weeks, at 50 cents a week, a teacher bought for her wedding dress, 6 yards of silk at \$2 a yard. In 1814, Mary Lyon began her career with 75 cents per week and board, and "boarded round;" more briefly, "75 cents a week, and walked for board." This was 25 cents a week less than she had been receiving as her brother's housekeeper. In Connecticut this was a common price as late as 1830, according to the testimony of those who received it. It should be remembered, however, that in those summer schools only reading, writing, and morals were required to be taught. Much attention was given to "good manners." Many boys, and all the girls brought work—straw braiding, sewing, and knitting. Some had their "stints" for each half-day. Mothers and grandmothers are still living who show us samples, laces and other ornamental work done in school.

For years the summer schools in some parts of Massachusetts were supported by tuition fees, and not by tax upon the district; the principle of free schools for all, boys and girls, rich and poor, in its full application was but slowly adopted.

But the progress begun before the passage of the law of 1789 has never ceased. The number of studies was increased. At the opening of the present century we find geography introduced, and other reading-books taking the place of the New England Primer. In arithmetic each pupil took pride in ornamenting his manuscript book of rules and work with various styles of writing. Every one worked his own way and at his own rate, without recitation or examination. At first arithmetic and geography were taught only in the winter, for a knowledge of numbers or ability to cast accounts was deemed quite superfluous for girls. When Colburn's Mental Arithmetic was introduced, some of our mothers who desired to study it were told derisively, "If you expect to become widows and have to carry pork to market, it may be well enough to study mental arithmetic." But our mothers persevered and were not far behind their brothers in reaching the mathematical goal of the times—the rule of three. In spelling they were not at all behind; boys were quite as apt as girls to be "spelled down."

A growing interest in schooling for girls was manifest in another connection. In the decline of education in the eighteenth century, the lack of teachers for the grammar schools, and the desire for a higher order of instruction than common schools afforded in places where grammar schools were not required by law, led to the establishment of academies. They were for the benefit of all, but were not dependent, like the grammar and common school, upon local support and patronage. The first one was founded at South Byfield, by bequest of William Dummer, who died in 1761. Leicester Academy was incorporated in 1784; the one at Westford in 1793. These and others founded late in the century admitted girls, and thus, in addition to the greater advantages directly afforded, contributed their influence toward opening wider to them the doors of the common schools. Bradford Academy, when opened, in 1803, received both sexes. A separate department for girls was established in 1828. Eight years later the boys' department was closed and girls only have attended since. The first academy for girls only in New England was the Adams Academy, Derry, N. H., incorporated June, 1823; the first in Massachusetts was Ipswich Academy, incorporated February, 1828. Abbot Academy, in Andover, was chartered in 1829.

Though these facts indicate the course of education in general, and the relative importance or unimportance attached to the education of girls, there never was a time when the superior culture of the first colonists was not possessed by some of their descendants. Here and there were communities which constantly felt their influence, and these communities increased in number with the revival of interest in general ed-

ucation. There was no period when women of education and culture were not found in homes of superior intelligence and refinement.

The first school in New England designed exclusively for the instruction of girls in branches not taught in the common schools is said to have been an evening school conducted by William Woodbridge, who was a graduate of Yale in 1780. His theme on graduation was "Improvement in Female Education." Reducing his theory to practice, in addition to his daily occupation, he gave his evenings to the instruction of girls in Lowth's Grammar, Guthrie's Geography, and the art of composition. The popular sentiment deemed him visionary. "Who," it was said, "shall cook our food or mend our clothes, if girls are to be taught philosophy and astronomy?"

In Waterford, N. Y., in 1820, occurred the public examination of a young lady in geometry. It was the first instance of the kind in the State, and perhaps in the country, and called forth a storm of ridicule. Her teacher was Mrs. Emma Willard. Before her marriage, in 1809, Mrs. Willard had been connected with an academy for girls in Middlebury, Vt., and afterward in the same place with a girls' boarding school, in which the higher branches were taught. "A Plan for Improving Woman's Education," from her pen, met the eye of Governor Clinton, of New York, who persuaded her to remove to that State, and secured the passage of "An act to incorporate the proposed institute at Waterford," and another, "to give female academies a share of the literary fund." This is believed to be the first law passed by any legislature expressly for improvement in the education of woman. Instead of an institute at Waterford, the seminary at Troy was opened, over which Mrs. Willard presided from 1821 to 1838.

The year before Mrs. Willard left Troy, Miss Catharine Fiske, another worthy teacher, died in Keene, N. H., where for 23 years young ladies from every State in the Union, more than 2,500 in all, had received her instructions in Watts on the Mind, botany, chemistry, astronomy, and other studies.

It is said that every State in the Union sent representatives also to Miss Catharine Beecher's seminary in Hartford, Conn. This began in the chamber of a store, in 1822, with seven girls, none under 12 years of age, but soon numbered from 100 to 160, and continued for 10 years. Other teachers aided her, allowing a part of her time to be given to the invention of a system of calisthenics, and to the preparation of textbooks for her pupils in arithmetic, mental and moral philosophy, and theology. Among other branches taught were the art of composition, history, Latin, and something of the art of teaching.

While these educators were doing this work in their respective States, the germs of a more permanent work were forming in Massachusetts. From 1818 to 1824 Rev. Joseph Emerson had been molding the intellectual and moral character of young women in his seminary at Byfield and Saugus. He had been a tutor in Harvard College and believed in

CHAPTER XX.

MOUNT HOLYOKE SEMINARY AND COLLEGE.

By Mrs. SARAH D. (Locke) STOW.

ITS HISTORY OUTLINED.¹

A review of the first 200 years in the history of our country shows that while the recognized need of educated men had led to the founding of more than one hundred colleges, comparatively little importance was attached to the education of woman; that before academies were founded, the common school was the only grade open to girls, and that they had not always been admitted there; that early in the present century private schools were expensive and short-lived; that the public welfare called for the establishment of permanent facilities for their higher education; and that the germs of such a work were forming in Massachusetts.

¹ A fuller account of the origin and growth of the seminary is found in the following publications:

History of Mount Holyoke Seminary during its first half-century, by Mrs. Sarah D. (Locke) Stow, published by the seminary in 1887.

Semicentennial Celebration; containing a report of the commemorative exercises of the fiftieth anniversary, with addresses, poems, etc.

Of Mary Lyon and her collaborators:

The Life and Labors of Mary Lyon; Hopkins, Bridgman & Co., Northampton.

The Life of Mary Lyon; an abridgment of the preceding, with additions; American Tract Society, 150 Nassau street, New York.

Recollections of Mary Lyon, by Fidelia Fiske; American Tract Society, Boston. Daniel Safford; Congregational Publishing Society, Boston.

Memorial Volume of Mount Holyoke Seminary, published in 1862.

Life of Edward Norris Kirk, D. D.; Lockwood, Brooks & Co., Boston.

Faith Working by Love; Life of Fidelia Fiske; Congregational Sabbath School and Publishing Society, Boston.

The Use of a Life; memorials of Mrs. Z. P. Grant Banister; American Tract Society, 150 Nassau street, New York.

Of Holyoke students:

The general catalogue of officers and students of Mount Holyoke Seminary, which includes the names of all who were members of the seminary from its beginning to 1889, with the school address, the present or last reported address, the names of husbands, date of marriage, and in the case of students the place and date of death so far as known.

The catalogues of the Memorandum Society, which report the chief facts in the history of each member, with her last reported address.



MOUNT HOLYOKE SEMINARY AND COLLEGE.

Two teachers, Miss Z. P. Grant and Mary Lyon, carried from the school of Rev. Joseph Emerson at Byfield his advanced views and philanthropic enthusiasm in the education of woman into their associated work in Adams Academy, Derry, N. H., and afterwards under more favorable auspices into their seminary in Ipswich.

Their method was to develop mind and heart by a systematic 3-years' course of study in which the Bible had a prominent place. The completion of the course was honored by a testimonial corresponding to a college diploma. The six testimonials received by their first graduates at Derry, November, 1824, were the earliest, so far as known, ever publicly conferred on young women.

Mr. Emerson had said to Miss Grant on leaving Byfield:

If you can put into operation on right principles a permanent seminary for young ladies, you may well afford to lay down your life when you have done it.

Unable to carry out their plans in Derry, they hoped for permanence in Ipswich. Their success and the demands for their graduates as teachers fully warranted their earnest efforts to put their seminary on a permanent financial basis. In 1835, 7 years from their beginning in Ipswich, 13 missionaries of the American Board, 53 teachers in the West and South, and 300 teachers in New England, New York, and New Jersey had gone forth from their school. They had applications for teachers from nearly every State and Territory in the Union. They saw the fruits of Ipswich training in the homes of the young wives and mothers they visited. But they had only the funds from tuition charges with which to carry on their work. They wanted a library, a laboratory, apparatus, and buildings for boarding and instruction; and they pleaded for endowment, urging that it would be no less difficult to sustain a seminary for young women without these appliances than a college for young men. Personal acquaintances pledged one-half the sum needed, but the public was apathetic and further appeals were fruitless.

Failing in this effort Miss Lyon withdrew from Ipswich in 1834 to undertake a new enterprise by which she hoped, to use her words—

To establish the principle that the education of the daughters of the church calls as rightfully for the free gifts of the church as does that of her sons.

Her object was not the benefit of woman as woman, but the good of the world through woman.

Born in Buckland, she had gone from the common schools of her native town to the academies at Ashfield and Amherst; she had been a teacher for 20 years, and was signally successful before she became possessed by the new ideas gained at Byfield in 1821, put in practice in the academy at Ashfield and a school of her own in Buckland, and more fully developed in her 10 years of invaluable experience at Derry and Ipswich. She was a woman of large mind and heart, ardent piety, and unconquerable faith.

She left Ipswich with the clearly defined purpose to found a perma-

nent institution consecrated to the work of "training young women for the greatest usefulness." For this end it was "designed to be furnished with every advantage that the state of education in this country will allow," and to "put within reach of students of moderate means such opportunities that none can find better ones."

Her plan was equally definite: To secure buildings erected and furnished by free gifts; teachers ready to take low salaries from love of the work; pupils in the same spirit of benevolent coöperation to do each her share in the work of the family. A building with home and school accommodations for 200 students, with a library and apparatus, would require at least \$30,000.

She laid the plan before a few gentlemen in Ipswich, invited together for the purpose, September 6, 1834. They appointed a committee to begin operations at once, with authority to act till the appointment of a permanent board of trustees. The committee consisted of Daniel Dana, D. D., of Newburyport; Theophilus Packard, D. D., of Shelburne; Rev. Edward Hitchcock, of Amherst College; Rev. Joseph B. Felt, of Hamilton; George W. Heard, esq., of Ipswich; General Asa Howland, of Conway, and David Choate, esq., of Essex. These men added to their number at different times, Rev. Roswell Hawks, of Cummington; Rev. William Tyler and William Bowdoin, esq., of South Hadley Canal; Rev. John Todd and Joseph Penney, D. D., of Northampton; Rev. Joseph Condit, of South Hadley, and Samuel Williston, of Easthampton. The committee issued circulars, appointed Rev. Roswell Hawks to solicit funds, and, until a charter was obtained, stood before the public as responsible agents for establishing the proposed seminary. Several of these gentlemen afterwards became trustees, and others resigned their places on the committee.

It is difficult at the present day to appreciate the obstacles encountered by an enterprise so new. Its aim was misunderstood, misinterpreted, pronounced visionary and impracticable. Prominent papers declined to insert articles in its favor except as advertisements.

Many good men and women had no faith in the success of appeals confined to benevolent motives; a low salary for teachers was disapproved, and the domestic feature, regarded unadvisable by many, ridiculed by others. Yet Miss Lyon never doubted that the oil would finally commend itself to the good common sense of New land. Her mother said of her:

Mary will not give up. She just walks the floor and says over and over : when all is so dark, "Commit thy way unto the Lord, trust also in him and he bring it to pass. Women must be educated, they must be."

The peculiar features of the plan became the means of its success. Within 2 months from the appointment of the committee Miss Lyon collected from women in Ipswich and vicinity nearly \$1,000 for expenses of agencies and other preliminaries.

What Ipswich Seminary did for her in the eastern part of the

the Buckland School did in the western. Mr. Hawks had full faith in the project, and was a hearty coworker. They obtained the aid of a few men of wealth and influence; but instead of depending on a few for large gifts they chose to gain the intelligent interest of the many with their smaller sums. One record book contains the names of more than 1,800 subscribers, from ninety places, promising a total of \$27,000, in sums varying from 6 cents in three cases, to \$1,000 in two instances only.

The aid of such men as Edward Hitchcock, Daniel Safford, Andrew W. Porter, and others of like spirit was worth more than silver and gold.

January 8, 1835, the committee decided upon South Hadley as the location, provided the subscription there could be raised to \$8,000; April 15, 1835, the name, Mount Holyoke Female Seminary, was agreed upon; February 11, 1836, the charter was granted; May 19, the site selected—a few rods south of the village common; and October 3, the corner stone was laid. September 5, 1837, just 3 years from the appointment of the committee, Miss Lyon wrote: "Our building is going on finely." November 8, 1837, the school opened.

It opened then, not because the building—or that part of it then erected—was wholly finished or fully furnished, but because that was the day appointed. The house was filled with eager students who knew that more than twice their number were as eagerly waiting to take their places.

Miss Lyon's theory that a seminary could be founded and conducted on the principle of benevolence was now put to a new test. Here were fourscore people to be provided three times a day with food prepared by their own hands, and a great house to be kept in order, all without infringing upon school work. It was comparatively easy to find one to whom the literary interests of the seminary could be in a degree committed, but Miss Lyon could rely on no one else to organize the domestic department, and to that she gave immediate attention. She had great skill in discovering what each one could do and in putting every one in the right place, but never had she more frequent use for her wondrous powers of invention than in so adjusting her time-tables that literary and domestic departments should not interfere, and in every emergency the right order of exercises appeared in due time. The work was done by circles, each having a leader. Every member was held responsible to be on the spot at the appointed time, and the leader was responsible that the work was done well. Each gave on the average 1 hour a day, and the smallest details of household cares were faithfully provided for.

Never were gathered eighty more willing hearts or nimbler hands. Most were over 20 years of age. Four entered the senior and 34 the middle class. Their zeal for the seminary was scarcely inferior to Miss

Lyon's. They counted it an honor to aid in carrying out her plans. At the end of the year she wrote:

So far we have been enabled to accomplish on every point all that we have encouraged the public to expect.

Financially the income fully met the outgoes.

Her biographer says:

Let it not be supposed that Miss Lyon's labors that first year were limited to domestic and financial interests. Besides giving systematic religious instruction, she matured a course of study, watched the recitations, directed individual students in the selection of studies, criticised compositions, instructed the middle class in chemistry—performing with them a course of experiments—and taught several other branches. For the first time in her life she taught Whately's *Logic*, and entered into it with as much zest as she had plunged into *Virgil* in her youth.

The year closed on Thursday, August 23. Public examinations Tuesday and Wednesday in the seminary hall were followed on Thursday by an address in church by Rev. Dr. Hawes, of Hartford, Conn., and the presentation of diplomas bearing the seminary motto on its seal, "That our daughters may be as corner stones, polished after the similitude of a palace."

Of that occasion Miss Eunice Caldwell, the associate principal for that year, afterwards Mrs. John P. Cowles, wrote as follows:

The trustees, the orator of the day, the teachers, the senior class, and the school walked to the church in procession, the school clad in white, with heads uncovered and shaded by parasols. The side pews and galleries were already crowded when Miss Lyon led her beautiful troop to the seats reserved for them. It was an hour in her life never to be forgotten. The battle had been fought; the victory was hers. In all that year she had never found an hour to spend in astonishment at her success, but now, when circumstances forced the view upon her, wonder, gratitude, and praise filled her heart. Her great soul was surcharged with joy; smiles and tears strove for the mastery on her radiant face. For an hour she resigned herself to the emotions of the occasion and gave way to a joy with which no one could intermeddle.

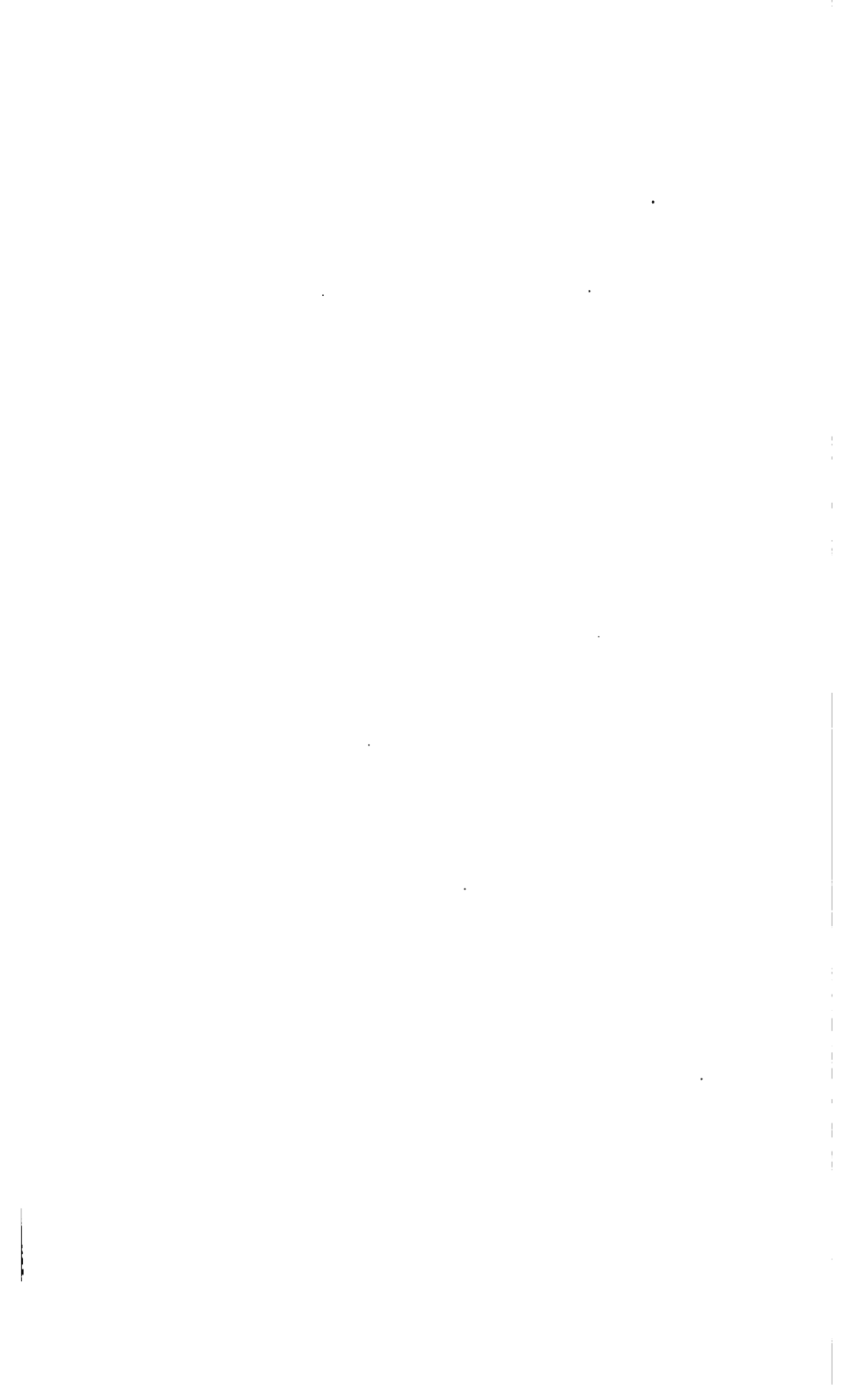
It illustrates the prevalent opinions of the time that when Rufus Anderson, D. D., was invited to make the second anniversary address many friends, solicitous for his reputation, tried to dissuade him from indorsing such an enterprise. The following sentences from his address reflect the views of the wisest men in that transition period in the history of the higher education for woman:

All the education due to the sex has not been given. We are influenced by ancient prejudices. We have misgivings as to the effect of a liberal education upon women, as if learning disqualified rather than fitted them for their appropriate sphere. Whether experience will lead to a 3 or 4 years' course of study is not yet known. Should it prove that two hundred young women can be retained in a seminary during a 3 years' course without, on the one hand, restricting the well-disposed too much by rules made for the wayward, and, on the other, without those corrupting influences to which large seminaries are supposed to be liable, the founding of this institution will form an epoch in the history of woman in this land. The experiment is one of general interest, and its success will be a national good. Should it fail, it will probably be because the public mind is not prepared for so great an ad-



Affectionately yours Mary Lyon,

From a miniature painting in 1832



vance, or because of some essential departure from its present course. But if it should fail we may be sure that from its ashes another would rise phoenix-like, more perfect because of the experience this has acquired. Regarded merely as an experiment, it is worth all it will cost. But as an institution destined to bless generations to come and be the commencement of a higher order of seminaries for young women, it will have peculiar claims on the beneficence of the intelligent and the good.

Mark Hopkins, D. D., the next anniversary speaker, said, referring to the seminary:

Many judicious persons still look with suspense at the issue of the experiment, though I am happy to say that so far as I know the objections are vanishing as the institution progresses and becomes better known; and what I have seen to-day strengthens my conviction that those objections will vanish entirely.

Prof. B. B. Edwards said, in the fourth annual address:

If a course of study like that pursued in this seminary could be introduced into every State it would be one of the finest props of the Union. No disorganizing influences emanate from it. No beetle-eyed prejudice, no narrow-minded bigotry can find a home where the sciences are truly taught; the air which is breathed is too invigorating; the impulses which it prompts are too noble. We do not deny that there are evils connected with a protracted and public course of education for woman. We think, however, that they can be obviated by a due measure of forethought and care on the part of guardians and teachers.

At the commemorative reunion on the twenty-fifth anniversary, Dr. Anderson took public occasion to say that he never had seen reason to regret disregarding the advice of his friends in delivering his address; that he became more and more impressed with the highly practical character of Miss Lyon's plans; that, though they then seemed large, they appeared more comprehensive afterward, and time had indorsed them all. He had become quite satisfied with the experiment.

Yet the seminary was more than 40-years old when T. W. Higginson, in "Common Sense about Women," asked:

Why is it that whenever anything is done for women in the way of education it is called an "experiment," while if the same thing is done for men its desirableness is assumed, and the thing is done?

Many who admitted the success of the experiment said that if Miss Lyon should die the seminary would either be closed or changed in character. But when she was first planning the enterprise she had written:

Much care will be taken to adopt permanent principles and mature a system which may outlive its founders.

For 11½ years she was spared to perfect and carry out her plans, simplifying each department of her system and reducing its details to such order that others could take them in charge.

She died March 5, 1849. It seemed to her teachers that they could not go on without her; but they had been one with her in spirit and in aim and loved the seminary too well to desert it in its need. In April the trustees elected in her place Mary C. Whitman, afterward Mrs. Morton Eddy, who had been associate principal for 7 years, and appointed

Sophia D. Hazen as her associate. Impaired health forced Miss Whitman to leave in the following spring. In her letter of resignation she said:

The experience of the year has been of great value, proving the excellence of Miss Lyon's plans, and that they can be executed by others.

Miss Hazen soon after became the wife of Rev. David T. Stoddard, of the Nestorian mission in Persia, and for the next 15 years the care of the seminary fell on Mary W. Chapin, afterward Mrs. Claudius B. Pease. After Miss Chapin's resignation in 1865 Mrs. Sophia Hazen Stoddard, having returned to this country, was acting principal till the election in 1867 of Helen M. French, afterward Mrs. Lemuel Gulliver. Miss French was succeeded in 1872 by Julia E. Ward, and Miss Ward in 1883 by Elizabeth Blanchard. When the college charter, with the name Mount Holyoke Seminary and College, was obtained in 1888, Miss Blanchard resigned her position, but remained the following year as acting president and inaugurated college work.

The associate principals, not previously named, were: Abigail Moore from 1842 to 1846; Sophia Spofford from 1852 to 1855; Emily Jessup from 1855 to 1862; Julia M. Tolman from 1858 to 1860; Catharine Hopkins from 1860 to 1865; Mary Ellis and Julia E. Ward from 1867 to 1872; Elizabeth Blanchard from 1872 to 1883 and Anna C. Edwards from 1872 to 1888.

Each principal and associate principal after the first was a graduate of the seminary and had been a member of the faculty for years preceding her election. All were worthy successors of Miss Lyon, and successively advanced the progressive work that she began, till a charter granting college powers could rightfully be given.

In 1889 Mary A. Brigham was elected president to assume charge in September, but a railway accident in June caused her instant death. In August Louise F. Cowles was appointed acting president.

From the first the seminary has had a decidedly religious character. For a long time revivals occurred almost every year. Sometimes nearly every member of the seminary has counted herself a follower of Christ before the end of the school year. Since 1863 the proportion of those who were church members before entering has steadily increased, and consequently the scenes of former years could not be looked for. Yet the teachers have habitually felt a peculiar responsibility for the spiritual condition of every one. Still the institution has never been sectarian. Many a student has graduated without knowing to what denominations her favorite teachers belonged. While Christian principle secures a higher standard of study and school work than any other motive can inspire, the ripened results are seen in the students' after-life. They are prominent in every department of educational, benevolent, and philanthropic effort. In 1887 of the 2,000 graduates and more than 4,000 non-graduates, three-fourths had been teachers for a longer or shorter time; the records of the Memorandum Society published the same year, that

is, in the fiftieth year of the seminary, show that 2,000 of its 3,000 members had taught in the aggregate 13,000 years. Two hundred had been foreign missionaries; great numbers were wives of home missionaries. Of the 1,789 married members of the Memorandum Society, 432 had married clergymen, 159 lawyers, 153 physicians, and about 75 professional teachers. The whole number married was nearly 4,000. Forty had become physicians. In the words of Dr. Tyler, in his semicentennial address:

They have also been leaders in education, in religion, in temperance, in reform clubs, in societies for foreign and home missions, in public schools and Sunday schools, in literature and science, in authorship and journalism, in church parlors and church work of every kind, in general society, and last but not least, in intelligent and cultivated homes, where all education and all religion must begin.

Not a few have been founders of Holyokes at the West and South, in Europe, Asia, Africa, and the islands of the sea. For the system adapted to secure the highest order of intellect for the service of Christ in our own land has proved to be no less useful in training mind and forming character in other lands; and in a greater or less degree its peculiar features characterize many institutions at home and abroad.

The results of the work of the seminary appear not only in the impress it stamps upon its students, in the work they do, and in its own recognized position, but also in the movement that has originated so many other institutions for the higher education of women and which is one of the most important developments in the life of our country and in the history of our race.

METHODS.

Mount Holyoke Seminary was founded to train young women for the greatest usefulness, and every arrangement of school and family was shaped with reference to this end. In the view of the founder the best-educated Christ-like woman was the most useful woman. Character was her educational aim, and her work was based on the principles of self-help in all lines, physical, mental, and moral. She desired students old enough—at least 16—and of sufficient maturity to have some degree of mental power and self-reliance, without being beyond the age when habits are easily formed.

By providing the best sanitary conditions known for boarding, sleeping, and study; by requiring regularity in meals and in hours for rising and retiring, daily exercises in the work of the house and in the open air; by instruction in the laws of health and the consequences of their violation, and by counting exposure of health no less faulty than neglect of study, she strove to make it the aim of each student to have a sound mind in a sound body.

The studies prescribed were not only those that develop the imagination and refine the taste, but primarily such as “strengthen the practical faculties, mature the understanding, and lay a firm basis for character.”

Few were allowed to take more than two studies at a time. Weekly reviews prepared for the general review that was required in every study before it was left for another; and a certain standard was required as the condition of advancement. Recitation by topics 4 days of the week led to easier use of the pen in the essay work of the fifth. Appeals were made to the highest motives only and no prizes were offered, no rivalry stimulated. Many could stay but 1 year, but the standard of thoroughness was the same for all.

The study of the Bible was as systematic and thorough as that in literature and science. Through the regular weekly lessons more time was given to it than to any other study of the course. Its teachings were illustrated and enforced in familiar talks at family devotions and in the weekly prayer meetings.

Once a week Miss Lyon gathered about her the church members of her charge for instruction in their more specific duties. The others she met on Sabbath evenings, and led each to see from the Bible in her hand that if she should fail of fulfilling the highest end of her being, it would be not because she had broken the law of God, but because having broken it she did not accept offered grace. With exceeding vividness and almost irresistible tenderness the claims and the invitations of Christ were set before them, with the responsibility of acceptance or refusal. When her watchful eye saw that the word of God was proving quick and powerful in any of her audience she would publicly invite to her room at a given hour those who desired more personal instruction. In that consecrated place, each going alone, perhaps to find her friend or roommate there-on the same errand, many hearts were opened to rejoice in the truth as it is in Jesus. These were gathered into a class for special nurture.

Miss Lyon was a woman of prayer. She taught her pupils to pray with and for each other and for the world; and secured to each the opportunity for private prayer morning and evening.

The Sabbath was sacredly guarded from week-day intrusions. Public worship in the village church was supplemented by social meetings of the students at home. For suitable reading and for studying the Bible lessons access was given to the exceptionally choice and well selected library.

There were annually two special days of prayer, and sometimes more. On the first Monday of January and on the day of prayer for colleges, school exercises were suspended to give everyone the opportunity to join thousands elsewhere in fasting and prayer for students and the world. Their observance, whether by prayer or by prayer and fasting, was voluntary with each one, but so universally was the opportunity embraced that those were often days of more than Sabbath stillness.

In order to do the utmost for each in reference to health, habits, and mental and moral improvement, the family was divided into sections of fifteen or twenty, and each section made the special charge of a teacher.

Yet Miss Lyon kept every one in her eye and heart. Her own personal influence so permeated the family that every member felt its power, and was assured that she took a tender interest in her welfare.

The teachers whom Miss Lyon had chosen for coworkers were a band of helpmates after her own heart. Those of the first year were from Ipswich Seminary. After that they were her own alumnæ.

In discipline she steadily inculcated the subordination of individual inclination to the good of the whole. This self-subordination she deemed essential to self-government. Every seminary regulation was shown to be included in the first or second great command, and therefore its observance was a duty whether a rule of the school or not.

Conscience and a sense of honor were cultivated by the trust reposed. Excluding espionage, Miss Lyon held each student responsible for her own observance of regulations and for keeping her own daily or weekly account of success or failure, and trusted her truthfulness in reporting it.

She laid upon her pupils a sense of personal responsibility in every department of life. By precept, by example, and by occasions for their practice, she held up the Bible standard of benevolence and self-denial. As Holyoke students, they were under special obligations to lead useful lives, for the seminary was founded in benevolence and for the good of the world, and therefore no one had a right to avail herself of its advantages and its low charges to carry out selfish ends of her own.

The domestic department furnished a fertile field for illustration and a useful one for practice. It was easy to show that the faithfulness of each member in her place was essential to the welfare of the whole family, and that the same principle applied in every relation in life. The prompt, expeditious, conscientious, and every way faithful helper about the house—and no other—was the prompt, expeditious, conscientious, and every way faithful student.

Hand and head and heart were each trained to strengthen each; but the manual and the mental were both for the sake of the moral. Thus "the whole Holyoke system is an arrangement for getting and applying moral power."

Miss Lyon cautioned her pupils against following her methods too closely, especially in teaching children or those who are weak in moral principles. For their safe use there must be sufficient self-control to give reason and conscience the ascendancy over impulse and imagination.

Her successors have followed the same principles of conscientious thoroughness and subservience of the intellectual and æsthetic to the moral and religious, modifying their application to meet changing conditions. In religious culture the spirit is everything, and that is a fresh gift with each generation of teachers and with each entering class.

GROWTH.

Two years before its opening a circular, addressed to candidates for admission, announced that the proposed seminary was to take "the

literary standard of Ipswich Seminary, and the same systematic course of solid studies, allowing for continued progress." There was then no accepted standard, and no other school for young women with which to make comparison.

Many feared that pupils could not be obtained without greater latitude in the terms of admission, for the preparation required was in advance of what had generally been regarded as a finished education for girls. A part of the number received at first were admitted for one quarter only, but others were waiting to take their places, and the first catalogue records the names of 116. In the second year 400 were refused for want of room, and for the same reason hundreds were kept away the third year. And though the standard of admission has steadily been raised, no year has passed without hundreds of applicants, even when in later times other institutions were springing up in different directions. With enlarged accommodations—teachers and students all reside in the same building—the average attendance had been, in 1887, for 50 years, 250; for 25 years, 279; for 5 years, 290. The whole number of names catalogued—repetitions not deducted—was then 12,498; the number of different students had been 6,606; and of graduates 1,982. In 1890 the total of different students had become 6,893, and of graduates, 2,113.

Miss Lyon planted an acorn and planned for an oak. She would not risk uprooting the tender plant by invoking any needless storm of public opposition. She gave it the name then commonly used to designate the highest opportunities open to woman. The name college would not have been tolerated, but she proceeded with all her energy and wisdom to make it as much of a college as was possible in her day. She designed to extend the course of study to include Latin and French, and wanted time for Greek and Hebrew also, but because "the views of the community would not allow it" sooner, she let 10 years pass before Latin had a place in the course. Then it appeared there, and in the way of growth, for classes had quietly taken it as an optional study every year after the first, till more than one-fourth of the students in school were in them. So French was taught from the very first year, though it first became a branch of the course in 1877, after 40 years. Other branches were introduced in the same way, and they, with all the older ones, continued to grow.

The 3 years' course was begun with the intention of extending it to 4, and Miss Lyon continued to urge this change; but public opinion was such to the end of her life that the trustees "were still afraid to venture it." The change was made in 1861, after 24 years. For the young tree, deeply and firmly rooted, did not die when the hand that planted ceased to water it. It lived and grew on. New impulse was given to its growth with the change in public opinion that created colleges for women. Some said of this mother of colleges: "Her work is done; let her die." Others said: "No; she does good preparatory work; let her live, but let her

keep to that." But Miss Lyon's successors knew that the work of "training young women for the greatest usefulness" would be needed, and therefore could not be finished till the millennium; to abandon the work or lower its standard would be to prove untrue to their trust, and they said:

Holyoke has not forgotten her mission, nor must she consent to part with her birth-right. The course of study must continue to extend; the standard of requirements must continue to rise; Holyoke teachers must continue to prepare themselves for higher and broader work; the new college courses may begin with higher requirements in some lines and with new requirements in others, but Holyoke must not be permanently distanced in any line essential to the fulfillment of her ideal. She "must have every advantage that the state of education will allow." She must be a college in fact, whether or not she take that name.

It was not uprooting nor transplanting that was wanted, but continued growth.

In 1872 provision was made for the study of German and Greek, and for French with a native of France. In 1875 an optional course was laid out in each of the 3 languages. Two years later there were graduates in both Greek and German. In 1877 more Latin was required for entrance, and one term of French or German was placed in the required course. When some one said: "Have less mathematics and give the time to other studies," the answer was: "Advancement in the sciences requires more mathematics, not less." Collections in all branches of natural history, apparatus for lecture rooms and books of reference for the library were increased at such a rate that new buildings had to be erected to contain them. The library in 1870, Williston Hall in 1876, and the observatory in 1881, with their respective furnishings, stimulated and accelerated the same growth that demanded them.

Besides the development of previous optionals into branches of the course, and besides increased requirements for entrance and for graduation, the regular branches grew beyond the boundaries of the course itself.

With 1873, the annual catalogues, which are more records than prophecies, began to announce "provision made for any who wish to continue their studies beyond the required course." This gave not only the post-graduate, but the student in any part of the course, opportunities for elective work in any direction; never as a substitute, but always beyond requirements. This pushed open the door for anyone who is prepared for it to give to the studies of each year, 6 months' or a year's work beyond the prescribed amount. In some lines, the advance has frequently gone beyond college requirements; and there is no study in which it has not been made to some degree.

When electives were introduced into the course in 1885, from which one of several must be chosen, the same principle was maintained, and optional work in advance only was admitted. In this and other ways have wisdom and courage been required to maintain the standards of thoroughness essential to steady growth.

To fit themselves for work in advance and for better work in all classes, seminary teachers have gone to join classes and observe methods in other institutions, or to study with professors in private for a longer or shorter time. The practical teacher who knows what she wants most, gets far more in a given time than the ordinary student can. Though this was done in Miss Lyon's time, it has been much more frequent in the last 15 years, and since 1882 on a more general and systematic plan.

Among the institutions resorted to for this purpose are Amherst, Williams, and Dartmouth Colleges; Cornell, Michigan, Harvard, and Berlin Universities; the Institutes of Technology in Worcester and Boston; Cooper Institute and The Art Students' League in New York, besides summer schools ranging in subjects from biology at Penikese and Wood's Holl to philosophy at Concord.

In 1837 the faculty consisted of the principal, associate principal, 2 teachers, and 3 assistant pupils, without distribution of departments. In 1889 there were over 30 teachers, each of whom had her department of instruction and her especial work.

As means have been obtained, accommodations have been enlarged and improved. The building erected in 1837, 90 feet by 50, was extended in 1841 to 160 feet, with a wing at the south end. Twelve years later the north wing was built, and in 1865 the gymnasium completed the quadrangle, within which rose the water-tower in the course of the same year. Steam-heating was introduced in 1868, and the library built in 1870. The artesian well and the elevator came in 1880, Williston Hall in 1876, and the observatory in 1881; in 1881, also, the gift of Goodnow Park.

Between 1880 and 1890 the seminary grounds increased to nearly ten times the extent of the original lot of about 10 acres; the purchase of about 6 acres, including the library site, being the only addition before that decade.

A pavilion built in 1884 in Goodnow Park has been made accessible both by foot path and by a carriage bridge and driveway. A greenhouse was built in 1882, and a house for the steward in 1886. Private rooms have been greatly improved, and were increased in number by the removal of the steward's family to a separate dwelling, and by transferring to another house rooms for music and drawing. The reception room, parlors, seminary hall, and reading room have all been recently renovated. The library was nearly doubled in size in 1887, and in 1889 a large addition to Williston Hall was finished and furnished with the best modern appliances; for, spacious as that building seemed at first, its laboratories soon became inadequate to the demands made upon them. The departments of history, literature, rhetoric, physiology, botany, and zoölogy are for the present satisfactorily provided for, while the growing departments of physics and chemistry make a new scientific building increasingly imperative.

There is growth not only in the increase of opportunities, which are only buds and blossoms of promise, but in the fruit brought forth—earnestness and enthusiasm in study. It was specially seen in the increasing desire of students to continue different studies longer or farther than the course required, when they knew that the seminary had no power to give a diploma corresponding to the extra work done, and sometimes even with the alternative of taking no diploma. In 1885, 80 were in these advanced classes; in 1886, over 100, besides the Greek, French, and German graduates; as many in 1887. In 1888 there were 199.

Though true attainment is always manifest in time, Holyoke graduates have often been placed at a disadvantage through lack of a degree. One might have a diploma for the seminary course, and one for each of the three language courses besides, and might also be in different lines in advance of graduates of colleges chartered as such, and yet she could receive no degree from her alma mater.

At the time of the *alumnæ* meeting at the semicentennial gathering, when "the future of the seminary" was being warmly and loyally discussed, the principal was in trustee meeting giving reasons why the seminary should secure the power to confer degrees on those who had earned them. While this was simply asking for a just recognition of what was already being done, or had been done, it involved petitioning for a college charter with a full college course.

Many of the *alumnæ* desired this change, and it was urged upon the board of trustees. In December, after the jubilee, that body voted to petition the legislature. On March 8, 1888, the bill granting a charter was approved authorizing "Mount Holyoke Seminary and College to grant such honorary testimonials, and confer such honors, degrees, and diplomas as are granted or conferred by any university, college, or seminary of learning in this Commonwealth."

Many would have preferred the college course and privileges without changing the historic name, Mount Holyoke Seminary, but it had become apparent that the public would not believe that college work had been done unless it was done under the college name.

At that time the entrance examinations in mathematics and other English branches, and the required course in mathematics, were equivalent to the requirements in many colleges. In science the instruction was conceded to be fully up to the college standard.

By raising somewhat the terms of admission, chiefly in Latin, and by requiring what had before been done optionally, the seminary course easily developed into a curriculum equal to that of other New England colleges. It embraced two college courses, one for the degree of bachelor of arts, which includes the formerly optional Greek course, and the other for the degree of bachelor of science, which includes the French or German instead of Greek. The seminary course, though still growing, was retained for those who have not the time for either of the others.

The requirements for admission to the college courses are the same that have been adopted by common consent in the New England colleges.

BUILDINGS AND FINANCES.

As at the beginning, subsequent buildings have all been erected and furnished mainly by donations for the purpose.

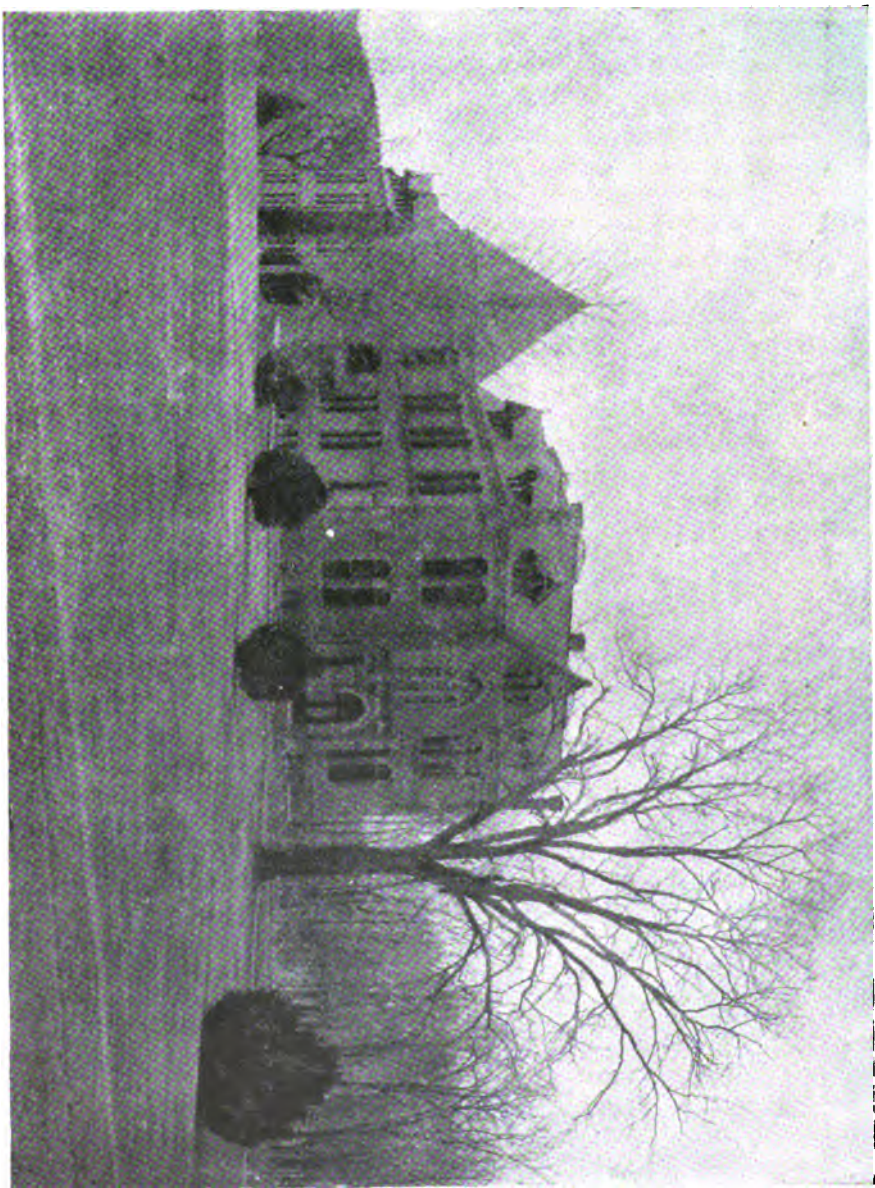
The buildings are all of brick, or brick with stone trimmings, except the house for drawing and music, and the upper part of the observatory. The one first erected was 94 feet by 50, with 4 stories above the basement, and is that part of the main building north of the present seminary hall. The parlors at the left of the front entrance were the same as now, but the first seminary hall is the reception room of to-day. It contained other public rooms for school and family uses, and private rooms for teachers and 80 students.

As fast as money was received it had been consumed upon the building, and for furnishings Miss Lyon had appealed to benevolent women. Ladies' sewing societies in different towns gave each a bed and bedding for a private room, or money for furniture or apparatus in public rooms.

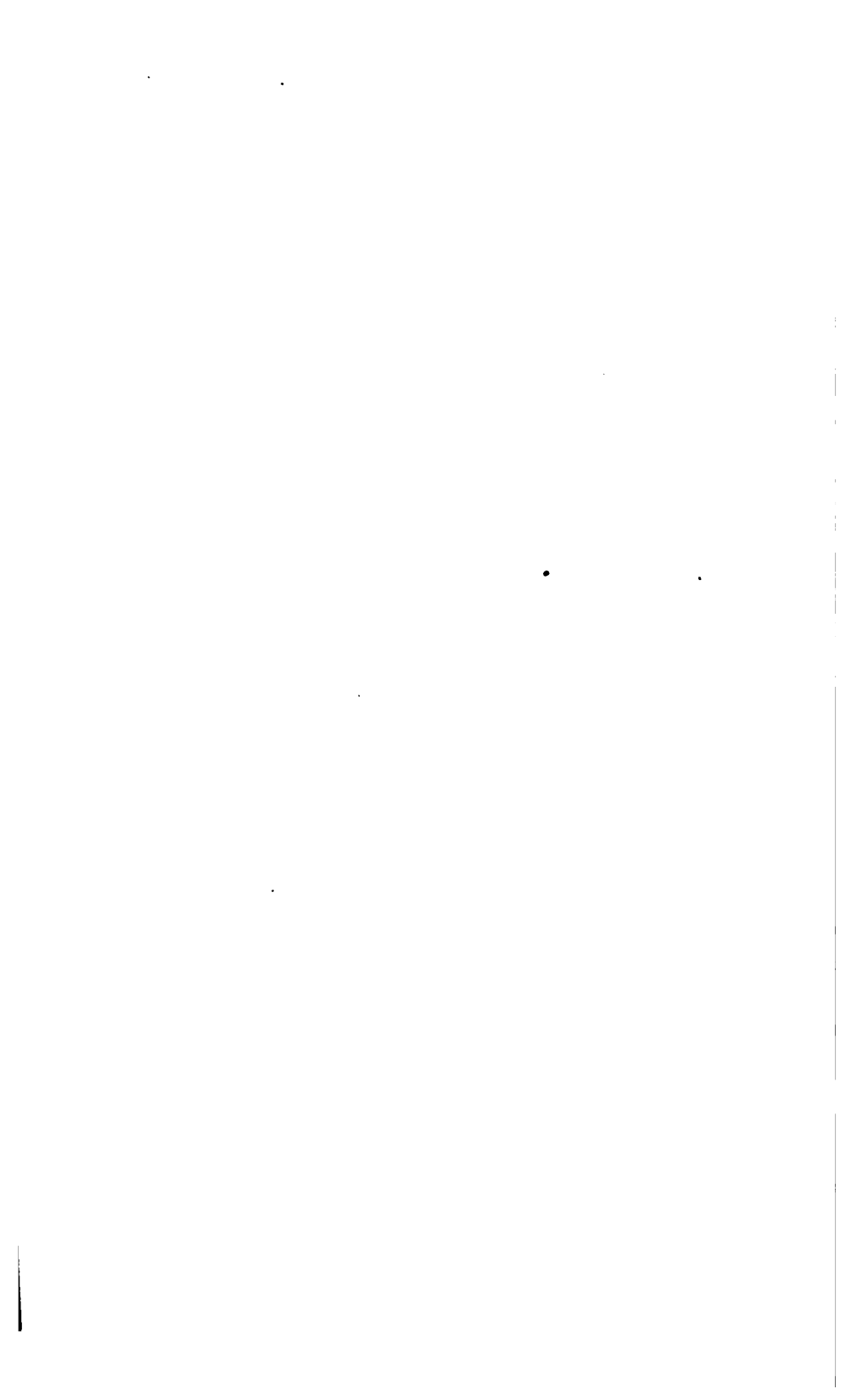
In the confident expectation of enlargement the south end of the building was finished without windows, save one at the end of the long hall in each story; and the building committee was continued in office. One hundred were received into crowded quarters the second year and 400 refused for want of room. Yet there was opposition to enlargement and delays from lack of funds. But December, 1841, in the fifth year, saw the completion of an addition at the south end, 70 feet long and of the same width and height as the original structure. From its end a wing 40 feet wide extended eastward 75 feet. There had now been expended in all more than \$50,000, much more than the first estimates, and still funds were wanting to complete the original design. This was not done till the north wing was built in 1853, nearly 17 years after the laying of the corner stone and 4 years after Miss Lyon's death. It is 120 feet by 40, with 4 stories above the basement and had 50 private rooms, a chemical laboratory and other public rooms. At the end of each wing were wood rooms for each story, and an elevator for wood and baggage.

Besides the piazza of two stories built at the first, a cupola was designed to relieve the plainness of the structure, and one is represented in the engraving published in Miss Lyon's memoir. The building committee for the north wing was authorized, also, "to erect an observatory on the center of the main building, as originally intended," but for want of funds it was not done till 1860.

The gymnasium was built in 1864-65. It connects the ends of the north and south wings, the latter being extended at that time to complete the quadrangle. The gymnasium hall was 80 feet by 30 and 19 feet high, with trestle roof slightly arching. A gallery was added later. It was heated by steam, and the same boiler was made to heat a new



MOUNT HOLYOKE SEMINARY AND COLLEGE—LYMAN WILLISTON HALL.



laundry. The new part of the wing had only floors and stairways till 1867, because the funds were needed more for the water tower, which was built in 1865, in the rear of the main building, communicating with each of its stories.

Wood fires, in Franklin stoves, were the only means for warming private rooms till about 1860, though coal was used earlier for public rooms. But since 1868 all the buildings have been heated by steam.

Until 1855 the original reading room, 20 feet square, opening northward from the first seminary hall, had served as library also. A new reading room was then finished, and the library was enlarged and furnished with galleries on two sides, giving abundant room for the timely addition of \$2,500 worth of books. In 1867 the number of volumes was about 3,000. The offer of a gift of \$10,000 for books, by Mrs. Henry F. Durant, on condition that a fire-proof building be erected within 3 years, was secured in 1870 by the erection of a building 48 feet by 33, costing about \$18,000. It has bay windows on the east and west, a high ceiling, and well-lighted alcoves; the furniture is of carved black walnut, and the floor inlaid. It is connected with the north end of the main edifice by a covered corridor 45 feet in length, protected by fireproof doors. In 1886-87 a room, nearly as large as the first, was added at its north end; it is filled with cases that could contain twice as many books as the present number in the library—which is nearly 13,000—and can be modified to hold many thousands more.

Many improvements have been made with funds solicited by the students and faculty. In 1867-68 they obtained over \$5,000 in sums ranging from 25 cents to \$100 toward the introduction of steam heating for public and private rooms. The elevator, costing nearly \$5,000, was secured by the same agency in 1880. Their success in obtaining steam heating inspired still greater zeal when a separate building for the sciences became a necessity. In the time of their prolonged effort came the financial panic of 1873; but the gift of \$10,000 from A. Lyman Williston, of Northampton, insured success and gave name to the Lyman Williston Hall, which was dedicated November 15, 1876. It was 66 by 63 feet, and three stories above the basement, with a wing 14 by 24, and cost \$50,000. It stands a few rods northeast of the main building in the shade of a magnificent black walnut. An addition, three stories in height, and about 60 by 44 feet, with an extension to the south of 20 by 31, was made at the northeast corner in 1889, at the estimated cost of \$30,000. The floors are oiled, and the rooms are wainscoted in light wood with natural finish. Besides large and well-appointed rooms for lectures and recitations, it has, on the first floor, good laboratories for physiology, zoölogy, and botany, with a biological reference library between the last two, and small laboratories for chemistry and physics; in the basement, ichnological collections, a dissecting room, and an aquarium; on the second floor, collections in zoölogy, mineralogy, and geology, with a set of Ward's geological casts, and special class rooms

for geology, literature, rhetoric, and history, and occupying the entire upper floor an art gallery, including a large central room and several smaller ones, containing a fine collection of paintings by American artists, copies from the old masters, and casts of antique statues and busts; also collections of ancient coins and bronzes, and of photographs and engravings.

The laboratories for zoölogy and botany give ample accommodations for the present, and are furnished with valuable apparatus, including twenty compound and thirty-six dissecting microscopes, with two fine microtomes, and other accessories. The botanical laboratory has valuable drawing apparatus, a fine set of French models, lately supplemented by those manufactured by Brendel, of Berlin; also, a complete set of the Kny morphological charts, an extensive herbarium, and many valuable specimens representing economical uses of plants.

When physics and chemistry—now very much cramped for room—are equally well accommodated in the new building, imperatively needed, the botanical department will have room to add to its already large collections the morphological herbarium which is being prepared.

The astronomical observatory was built in 1881. From 1853 to that date, the revolving roof of a very plain structure east of the main building had sheltered a good telescope with a 6-inch object glass. In that time it had become overtopped by surrounding trees, and the new building was placed at the southwest of all the others on an excellent site across the street. Its equipment and all the work of its erection was under the supervision of Prof. Charles A. Young, of Princeton, N. J., who describes it as follows:

It consists of a tower with a dome 18 feet in diameter flanked by two wings, one extending to the west and one to the north. In the dome is mounted a fine 8-inch equatorial completely fitted out with clockwork, finding clock, micrometers, spectro-scope, solar eyepiece, etc., and so arranged that the circles can be read and the clamps and tangent screws worked from the eyepiece of the instrument. The object glass is almost entirely the work of the senior Alvan Clark, and is one of the most perfect specimens of his art. In the transit room is mounted a meridian circle by Fauth & Co., of Washington. The instrument has a telescope of 3 inches aperture, and circles of 16 inches diameter, reading to seconds by two microscopes. It has a reversing apparatus, and is fitted with a "latitude level" and micrometer, so that it can if desired be used as a zenith telescope. A large collimator is mounted upon a pier south of it, and in the corner of the room is a clock with Denison escapement, also by Fauth & Co., as is the chronograph, which is mounted in an adjoining closet. The observatory has also a sextant and artificial horizon, and a set of meteorological apparatus.

The cost of the whole, \$10,000, was the gift of A. L. Williston in memory of a deceased son.

In the autumn of 1882 a small greenhouse was built at the south end of the gymnasium, with a gift of \$500 from two of the alumnae.

On the purchase, in 1883, of the place next the seminary grounds on the north, once belonging to the Dwight family, the house was made over and devoted chiefly to classes for drawing and to music rooms.

The alumnæ in all parts of the world, and others whom they have interested, have contributed to the collections in art and the sciences, and in late years have made many valuable additions to apparatus in different departments.

The limit of valuation in the original charter, \$100,000, was extended in 1869 to \$500,000, and in 1887 to \$1,000,000. The estimated value of grounds, buildings, and apparatus in May, 1889, was \$319,000.

The ordinary expenses for board and instruction were met for 50 years by the current income from charges for board and tuition. Miss Lyon had insisted, though not without opposition, on making the charges "from one-half to one-third less than in existing seminaries." It was part of her special design to put the best advantages anywhere to be found within reach of the class most likely to be benefited by them and to use them for the good of the world; not the richer, not the poorer, but the class with moderate means, "which contains the main-springs and wheels that move the world." The first year the charge for board and tuition was \$64; the next 16 years \$60, and in 1857 it was raised to \$80; war prices in 1862 forced it to \$125; in 1867 it was fixed at \$150; in 1874 at \$175, and included fuel, lights, and lectures, which, till then, had been additional. When the college charter was obtained in 1888 it was made \$200. Extra charges have never been made for the languages, vocal music (in classes), drawing, or painting.

Miss Lyon herself never would accept more than a salary of \$200 a year and a home at the seminary. While she did not expect nor wish her successors to receive so little, she did expect to secure teachers willing, from love of the work, to accept support instead of compensation. And she was not disappointed; as term bills have been raised salaries have been increased, but they have always been low, much less than the same persons have frequently been offered elsewhere. As late as in 1864 the highest did not exceed \$300, besides board, fuel, and lights. In 1868 the principal received \$425, the associate principal \$375, and the other teachers from \$150 to \$300 each.

The cost of board has been greatly lessened by the students' giving each an hour a day—under the supervision of matron and faculty—to the daily work of the household. For a long time it was all done in this way, but of late years help is hired for the heavier work.

This feature of the original plan was the one most ridiculed and has always been least understood. Its design was not to teach housework—home was the place for that. Pecuniary considerations first suggested it as a means for lessening outlay, not for defraying expenses. But in its usefulness for self-help and the formation of good habits, Miss Lyon saw so much stronger reasons in its favor, even before it was put to test, that she seldom alluded to its economy, and afterward often said:

If dollars and cents alone were concerned we would drop it at once; the department is too complicated and requires too much care to be continued were it not for its great advantages.

Once only has help been received from the State. During the war a debt had been accumulating and aid was asked in 1864. The legislative committee unanimously reported the opinion—

That the Mount Holyoke Seminary is eminently worthy of legislative recognition and of the patronage of the State in a grant of money from any funds that can be applied to educational purposes of this character; that in propriety and strength of claim it falls not below those institutions of learning which have been the recipients of material assistance from the State.

Yet the grant was not obtained, probably because of the demands for the war and the uncertainty of public affairs. In 1866 the effort was renewed, but though the committee reported favorably the bill did not pass. In 1868 the debt had become \$25,000, and the trustees asked for a grant of \$40,000. The committee on education gave as reasons in favor: The high standard of scholarship and character; the great number of teachers trained; the value of the household work in honoring labor and forming habits of system, fidelity, and self-help; the low charges for so superior advantages; and the liberality of the State to its colleges for men—naming among late instances the grant in 1859 of \$50,000 to Tufts College, and \$25,000 each to Amherst and Williams Colleges, and Wilbraham Academy; and in 1865, \$10,000 to Amherst Agricultural College.

The committees of education and finance both reported unanimously in favor of a bill granting the petition, and it was passed, though even then there were legislators who demurred at aiding institutions for women.

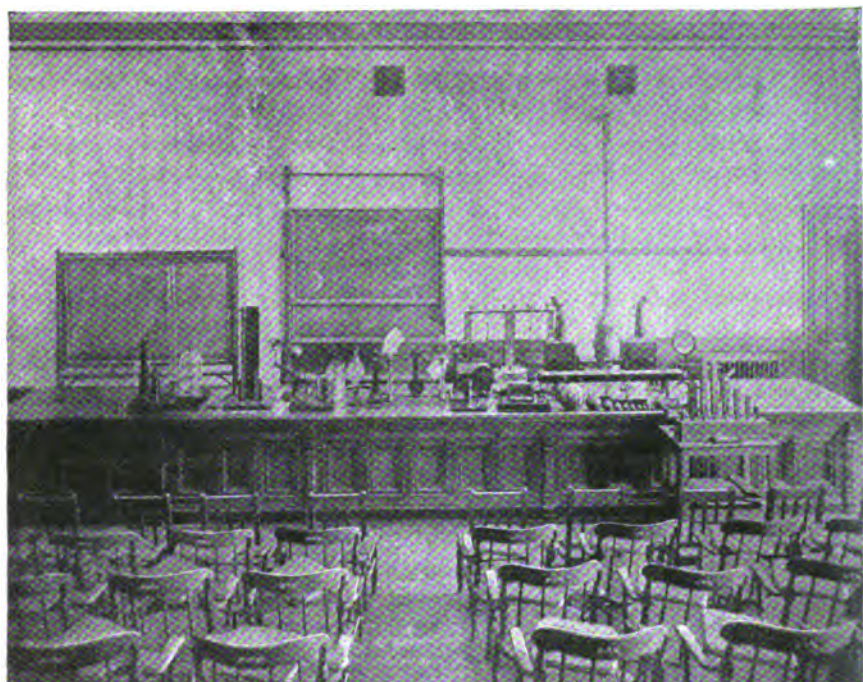
The grant paid the debt, completed the amount needed to introduce steam-heating, and secured the building of the fireproof library, and with it the gift for books offered on this condition. Since that time no debt has been allowed to accumulate.

The grounds have been much enlarged by donations for the purpose. To the gift in 1880 of Goodnow Park—a tract of about 30 acres—a permanent fund for its improvement was added by the same donor, E. A. Goodnow, of Worcester.

Early efforts were made to obtain a fund for the benefit of deserving students; but before 1872 it amounted only to \$5,000; it has since increased to \$58,000. In 1882, Homer Merriam, of Springfield, and in 1884, Edward Smith, of Enfield, gave each \$5,000, with the request that its income be loaned rather than given. Bequests amounting to \$10,000, with a legacy of \$20,000 received in 1883 from John B. Eldridge, of Hartford, Conn., and another of the same amount in 1885 from Eber Gridley, also of Hartford, constitute a fund whose income is used for general purposes.

In 1871, Mrs. Julia M. Tolman, formerly associate principal, left a sum whose income should be used for special grants to teachers for health or study.

Three other friends have given \$1,000 each, of which \$1,000 was from Charles Boswell, of West Hartford, Conn., for the library.



MOUNT HOLYOKE SEMINARY AND COLLEGE—THE PHYSICAL AND CHEMICAL LECTURE ROOM, WILLISTON HALL.



MOUNT HOLYOKE SEMINARY AND COLLEGE—THE LIBRARY.



For half a century the seminary did its work without a department endowed. In 1887 the alumnae made a jubilee gift of \$20,000, to be called the "Mary Lyon fund," for endowing the chair of the principal. Since that time \$13,000 has been received for general endowment.

A college charter having been obtained and work on the college basis having begun, it is hoped that funds will soon be secured for needed endowments in all departments.

The permanent funds, January 1, 1890, foot up as follows:

For aiding students:

Education fund.....	\$58,000
Homer Merriam loan fund.....	5,000
Edward Smith loan fund.....	5,000
	<hr/> \$68,000

For general purposes:

Eldridge bequest.....	20,000
Gridley bequest.....	20,000
Other bequests.....	10,000
	<hr/> 50,000

For endowment:

Mary Lyon fund.....	20,000
General endowment fund.....	13,000
	<hr/> 33,000

Tolman fund.....	3,640
Goodnow Park fund.....	5,000
Boswell fund.....	1,000
Fobes fund.....	1,000
George Merriam fund.....	1,000
	<hr/> 162,640

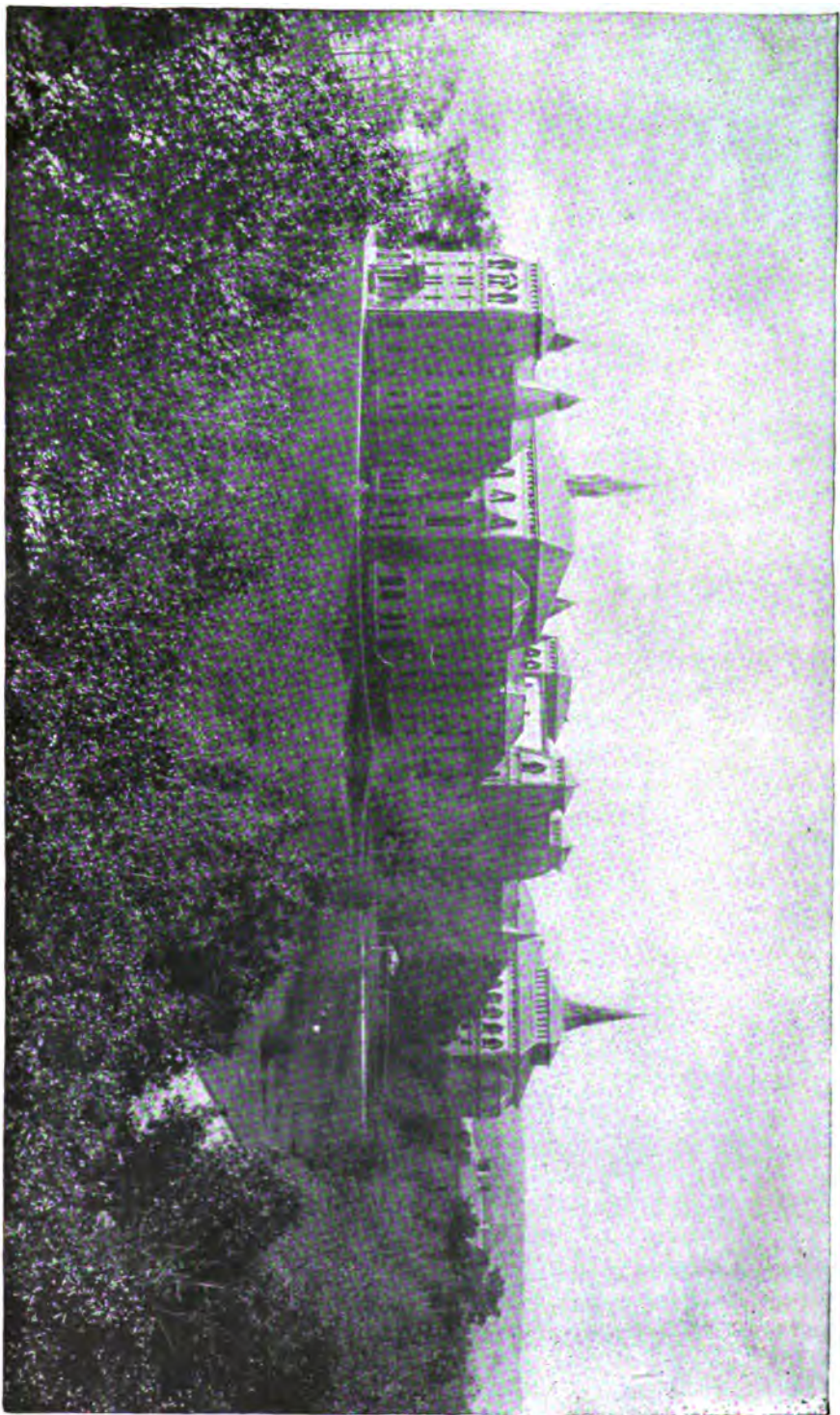
CHAPTER XXI.

HISTORICAL SKETCH OF WELLESLEY COLLEGE.

By MARION PELTON GUILD.

Wellesley College has been in operation 14 years. It was founded by Mr. and Mrs. H. F. Durant, of Boston. They had lost an only and idolized son, and had gained, through the great grief of his illness and death, the one, a radical conversion to Christianity, the other, a completer consecration to Him who was already her chosen Master. Their intense parental feeling flowed outward to children in general, and led them to devote the great fortune which would have been their son's, to the establishment of some Christian institution for the young. At first they thought only of a school for boys or girls. But as they studied farther into the subject of education in the United States, they saw that the teaching in the schools of the country had passed almost wholly into the hands of women, who were in many cases not adequately prepared for the work, while the means of training them were to a large degree lacking. The higher education of women thus stood out as an especially fit object for their beneficence. While they had this matter in mind, Mr. Durant accepted a position as trustee of Mount Holyoke Seminary. The earnest piety which they found prevailing there was so in accordance with their own views that they sought to duplicate it in the institution which they were about to found, and for which they were already planning such advanced courses of study as should make it the intellectual equal of the colleges for young men.

They were both exceptionally qualified for the great work which had thus taken definite shape. Mr. Durant had been a distinguished lawyer, the rumored successor to the honors of his beloved friend, Rufus Choate. But at his son's death he gave up his legal practice forever, and devoted himself to the cause of religion, winning much success as a lay preacher. While his enthralling power over a jury is still one of the traditions of the Massachusetts bar, and while many of our church circles keep vivid memories of his impassioned pleadings for the souls of men, it is not so generally known that his tastes were above all literary, and that a scholar's life would have been his preference from the beginning. Yet this fact is needed to account for the final direction of his energy.



WELLESLEY COLLEGE—MAIN BUILDING.

Mrs. Durant, who survives him, is a lady of vigorous mind and remarkably varied culture, as well as a thoroughly loyal Christian woman. With a nature as strong as her husband's, she balanced his rare idealism by a unique executive power. Aside from her labors at the college, she is the honored head of the Boston Young Women's Christian Association, and her loving wisdom is seen in a host of other charities.

At the time of their son's death, in 1863, Mr. and Mrs. Durant already owned a large property in the village of Wellesley, where they spent their summers, and on one of whose beautiful hills they were planning to establish a homestead. After deciding to build the "seminary," as they at first called their new undertaking, they kept on making judicious purchases and improvements, until they had in readiness a magnificent park of 300 acres, rich in its natural variety of hill, glen, and meadow, and bordering on the picturesque little lake whose shores formerly witnessed the preaching of John Eliot to the Indians. A high hill immediately overlooking the lake was chosen as the site of the proposed structure, and on the 14th of September, 1871, the corner stone was laid by Mrs. Durant, without any public ceremony, Mr. and Mrs. Durant and the workmen alone taking part in the service. A portion of the inscription in the Bible which was placed in the corner stone shows the spirit in which Wellesley College was founded:

"This building is humbly dedicated to our Heavenly Father; with the hope and prayer that He may always be first in everything in this institution; that His word may be faithfully taught here, and that He will use it as a means of leading precious souls to the Lord Jesus Christ. "Except the Lord build the house, they labor in vain that build it."

A full description of this grand structure may be found in Harper's Magazine for August, 1876. Its architect was Hammatt Billings, the designer of the Plymouth Monument. It is a fourstory brick building with mansard roof, having freestone trimmings, and adorned with towers, porches, and oriel windows. It measures 475 feet in length, by 150 in extreme width, and was designed to accommodate 300 students and a faculty of 30. Its plan is a double Latin cross, with a large well in the center, which opens up to a huge skylight in the roof, thus increasing the cheerful light of the halls and corridors, and with two smaller wells in the cross-corridors at the ends. It contains a frescoed chapel provided with a valuable organ, a fine library, arranged with the utmost care for the convenience and pleasure of its frequenters; a gymnasium, an art gallery, parlors, dining room, kitchen, etc., besides extensive laboratories, recitation rooms, and suites of private rooms for faculty and students. Especial attention was paid to hygiene in its construction and furnishing. Its drainage is most thorough; it is heated by steam by the method of indirect radiation, and lighted by gas made upon the premises and carried into every room. All its water comes from artesian wells. But the first point that strikes the newcomer at Wellesley is the exceeding beauty with-

out and within. The founders wished especially to impress upon the students the truth that the most profound religious consecration and the highest intellectual work are friends, not enemies, to beauty of every sort. They therefore called in some of the choicest delights of nature and art for the æsthetic training of these adopted children, who have well named their alma mater "The College Beautiful." A few examples will illustrate. An immense cluster of tropical plants, growing in a marble basin, greets the eye from the front door. A large number of fine paintings and statues, some of them by great masters, are scattered through the corridors and public rooms, that the inmates may learn to distinguish excellence by daily association. In 1880 a small reception room was fitted up in honor of Mrs. Browning, a scholar of their own sex toward whom the veneration of the students could wisely be directed. In a quiet recess, against a background of rich, dark drapery, stands the exquisite bust of the woman-poet, made especially for the college by Mr. W. W. Story. There are three stained-glass windows, containing ideal portraits of Aurora Leigh, Lady Geraldine, and Little Ellie; the walls are hung with an elaborately painted and embossed paper, in imitation of Venetian stamped leather; the frieze consists of 24 separate oil paintings of flowers; a heavy Turkish rug covers the floor, and nearly every article of furniture is a costly curiosity.

In 1870, the year previous to that in which work was begun upon the building, a charter to incorporate the Wellesley Female Seminary had been obtained from the Massachusetts legislature. The original trustees under this charter were Rev. E. N. Kirk, president; Hon. William Claflin, then governor of the State; Rev. Austin Phelps, Rev. Howard Crosby, Rev. N. G. Clark, Mr. Abner Kingman, and Mr. and Mrs. Durant. In 1873 the name of the institution was changed to Wellesley College, after much reluctance on the part of the founders, who feared that it might seem too ambitious; and in the same year the college grounds and buildings were formally made over to the corporation by Mr. Durant, with certain reservations for Mrs. Durant during her life. In 1877 an act was passed authorizing the institution "to grant such honorary testimonials, and confer such honors, degrees, and diplomas as are granted or conferred by any university, college, or seminary of learning in this Commonwealth."

In September, 1875, the completed building was opened to students. Miss Ada L. Howard, a former instructor at Mount Holyoke, and a teacher of many years' experience, had been appointed president. The faculty, aside from the gentleman in charge of the department of music, consisted of between 20 and 30 ladies, 9 of them professors, who had been chosen with much care from the specialists in different fields of knowledge. The unprecedented and exclusive choice of women for these high positions was daringly made. It was intended to prove the mental powers of the sex by their success in government and instruction, as well as by the students' attainments. This feature, with a few

minor exceptions, is continued at Wellesley to-day, and its vindication may be sought in the history of the place.

Only two of the original professors now remain in the faculty, and of these only one was in residence during the first year, Miss Susan M. Hallowell, M. A., who fills the chair of botany. Miss Hallowell is one of those women whose sterling ability has been tested by the obstacles they have overcome in the struggle for advanced training, at a time before the doors of American colleges were opened to them. After several years of unusually successful teaching in the Bangor high school, she devoted herself exclusively to botany, and studied under eminent instructors at Penikese, at Cambridge, and at Berlin, besides doing a great deal of work by herself. She has built up the strongest department in natural science at Wellesley, and one of which the institution is justly proud.

The college opened with 300 students, who had been chosen from a much larger number of applicants. But when these 300 had been examined, it was found that only a small proportion of them were ready for collegiate study. The comparative novelty of such study for women, the almost total lack of fitting schools, and the difficulty of correct classification upon the scanty data furnished in advance by the candidates, had combined to produce this result. The fitting of the unprepared majority was a problem. But "Mr. Durant's plan was flexible enough to bend to this need, strong enough to bide its time for full expansion. In its earliest years the college was thus compelled to be largely a great preparatory school, but only in those years, for the first calendar issued announced advanced requirements in Latin and mathematics for each succeeding year, until in 1881 full preparation in Latin, Greek, and mathematics would be required for entrance to the freshman class. Following closely on this came another announcement to the effect that no preparatory students would be received after 1880, and in September of that year the college found itself freed from the encumbrance of a heavy secondary school and ready to build up its legitimate departments."^{*}

In the light of these facts it is interesting to trace the rapid advance in the standard of admission. In 1875 it was as follows: Latin grammar, including prosody; two books each of Caesar and Virgil, two orations of Cicero, arithmetic, algebra through quadratic equations, five books of Loomis's geometry, modern and physical geography. In 1877 the required Latin had already been more than doubled. In 1879 it reached its present point, including four books of Caesar, six of Virgil, seven orations of Cicero, and prose composition. By way of encouragement, prizes of \$250 each were given by Mr. Durant in 1878 and the 3 following years to the student who entered the freshman class best fitted in Greek,

^{*}This and a succeeding extract are taken from the admirable sketch of the earlier history of Wellesley, written by Miss Isabella L. French of the class of 1883, and prefixed to the first edition of the *Alumna Record*.

Latin, and mathematics, and there were additional prizes for full preparation in Greek, though this did not become obligatory till 1881. The ground covered was the same as at present: Grammar, prose composition, and three books each of the *Anabasis* and the *Iliad*. (Candidates for the scientific course have always been allowed to substitute preparation in modern languages for that in Greek.) This advance, with the addition of ratio, proportion, and progression in algebra, raised the standard of admission to its present point, with the exception of important requirements in English and history, which were begun for the most part in 1883 and 1884.

As they now stand, the requirements in classics and mathematics are the same at Wellesley, Smith, and Vassar, while the only difference at Bryn Mawr is the addition of one more book of Xenophon. At Yale the mathematics is identical; the Latin adds Virgil's *Bucolics* and Ovid's *Metamorphoses*, but drops two orations of Cicero; the Greek is the same as at Bryn Mawr. Harvard can not justly be compared with the three sisters in classics, as its basis of examination is different, but it demands less mathematics than they. Wellesley is in the foremost rank of American institutions in English requirements and modern languages, but it stands with Yale and Vassar in demanding no science as yet.

Though the collegiate department at Wellesley was small at first, it maintained its due importance, and ample provision was made for its work. The elective system prevailed from the first. To the freshmen of 1875 five courses were open, though the studies for the first year were nearly the same in all. These were a general classical course, a scientific course, and courses for honors in classics, mathematics, and modern languages.

The general classical course was similar to that most commonly pursued in young men's colleges. Mathematics and Latin became elective after the first term of the sophomore year, which completed the work in spherical trigonometry and the study of Livy and Horace. Though Greek was at that time altogether elective, the higher work in the classics was arranged largely for students in this course. It included in Greek, after the freshman work in the *Iliad* and *Odyssey* and in Plato's *Apology*, selections from Herodotus, Thucydides, Demosthenes, and Aristotle; Plato's *Republic*; five plays from the great dramatists, and prose composition throughout the course. The Latin embraced selections from Tacitus and Juvenal, Plautus' *Captivi*, Cicero *De Officiis* and *De Oratore*, selections from Lucretius, Martial, and the lyric poets, mediæval hymns, 4 years of prose composition, and 2 of verse. One science was required in each year—from the sophomores, chemistry; from the juniors, physics; from the seniors, geology, followed by astronomy. Modern languages could be elected. This course was chosen by a majority of the students. They were encouraged in so doing by Mr. Durant, who realized the importance of fine classical work in establishing the rank of the new institution.



WELLESLEY COLLEGE—CENTER OF MAIN HALL, WITH GALLERIES.



The Greek department owes its success in large measure to its first head, Prof. Mary E. Horton, who occupied its chair for 12 years. Since her resignation, in 1887, she has been appointed one of the college board of visitors. Her successor is Prof. A. C. Chapin, B. A., of Michigan University. Miss Chapin is a classical teacher of much experience, both inside and outside of Wellesley, and her methods resemble, both in fine insight and careful finish, those of the self-made scholar who preceded her. The head of the Latin department is Prof. F. E. Lord. She received her classical education in her father's library, and taught Greek and Latin for 9 years at Vassar before accepting her present position. Both these departments are distinguished in the college for sound scholarship, accuracy, and attention to comparative philology, while the two rare women who laid the foundations of their prosperity are venerated by the younger members of the faculty, one of whom has happily compared them and their fellows to hand-wrought lace, in distinction from the machine-made article which it is so easy to get.

The scientific course, however, became both prominent and popular before many years had passed. The founders of Wellesley realized with surprising clearness the marvellous advance in natural science which the century had already witnessed, and foresaw to some extent the rapid progress which has since been made. They therefore provided the college at the outset with unusual advantages in the way of laboratories and apparatus, particularly in the departments of chemistry and physics, where they would be needed first.

The students' physical laboratory is very large, and is divided into eight separate rooms and alcoves, including a dark room for photometry and another for photography. The superb apparatus was selected with great care at home and abroad. The electrical outfit is especially complete and choice. The department has also a large lecture room, oxyhydrogen lantern, and *porte-lumière*. The professor of physics and physical astronomy is Miss S. F. Whiting. Her father was the principal of an academy and taught science; as his pupil and assistant, she caught the scientific enthusiasm when yet a child. She was graduated from Ingham University, and afterwards taught both at Ingham and at Dr. West's school in Brooklyn, where she was associated with the late honored Miss Brigham. She pursued her specialty at the Massachusetts Institute of Technology before coming to Wellesley, and has since added to her wide familiarity with her subject by work in the laboratories of the Berlin and Heidelberg Universities.

The department of chemistry has two laboratories, one for general experiments, the other for qualitative and quantitative analysis. Each student has a separate desk, and is provided with all necessary apparatus and reagents. A mineralogical laboratory was fitted up in 1878-79, in which each place is furnished with a set of blowpipe tools and other conveniences. For several years, the instruction in these branches was under the charge of the thorough and experienced teacher, Prof.

Maria S. Eaton. It is now committed wholly to three of her pupils, Wellesley Alumnae of the class of '80. All of them have done advanced work since taking their degrees, and in particular the head of the department, Associate Prof. C. F. Roberts, has pursued her studies extensively in Cambridge, Mass., and Cambridge, England.

Wellesley was the first college in the United States to establish a chair of biology, which it did in 1878-79, and called to it Miss Emily Nunn, now Mrs. C. O. Whitman. This work was reorganized in 1883, and its accommodations were increased. There are now three biological laboratories, with dissecting and compound microscopes for each student, and many valuable accessories. The head of the department is Prof. M. A. Willcox. A graduate of the Salem Normal School, Miss Willcox spent some years in general teaching, giving up her summers to scientific study under the best instruction. Like the professor of physics, she made further preparation at the Massachusetts Institute of Technology before coming to fill her present position. She also studied for 2 years at the University of Cambridge, England.

The scientific course at Wellesley provides for a wide range of work on the subjects above mentioned, on botany and on geology, with some opportunity for modern languages and other electives. Instruction in these branches has from the first been given exclusively by lectures. Text-books are used only for reference. Systematic laboratory practice is required of each student. An outline of the first year of botanical work, as done by the pioneer classes, will serve to illustrate the Wellesley methods in science. After a general introductory lecture came the study of leaves. Several sets of specimens were distributed to the members of the class, who were required to sketch each kind, and write out descriptions from observation. Afterwards they learned the technical descriptive terms from lectures on leaf morphology. Next came the histology and physiology of leaves; then phyllotaxy. The succeeding work on stems and roots was followed by a careful study of germination, made from a variety of seeds in different stages of advancement, sketched by the aid of the microscope. The flower was studied in detail, like the leaf, with special attention to the morphology of the essential organs, including adaptations for cross pollination. The colors, shapes, and perfumes of flowers were discussed in their relations to insects. Then came seeds, fruits, and their dissemination; lastly, the classification of plants. A large number of flowers were analyzed during the year, but the students were taught to consider this only one branch of botanical work. They were required to sketch every object studied in the laboratory, and occasionally to lecture on the results of their own observations. Each was expected to start an herbarium of fifty species.

The scientific course was supplemented by the work of the Microscopical Society, which was organized early in the history of the college, and has proved itself eminently useful and successful. The collection of microscopes is a fine one, and now numbers "ninety-nine, in-

cluding a Polari microscope, and one especially adapted to the study of rock sections. There is a large battery of objectives, ranging in power from one twenty-fifth inch down, and a variety of accessory apparatus."

The courses for honors in classics, mathematics, and modern languages are sufficiently indicated by their names.

It was soon realized, however, that none of the lines of work thus arranged left any opportunity to those who pursued them for the study of music and art, which is so important to the general culture of young women. To meet this need the trustees established, in 1878, the 5-years' course with music, which "enables those who take it to graduate in any of the regular college courses and at the same time to acquire a scientific musical education," by making music one of their ordinary studies and distributing their other work through 5 years instead of 4. The plan proved admirably adapted to its object, and a 5-years' course with art, on a like basis, was introduced in 1879.

All the students, whatever else they might elect, were required to study the Bible throughout the course, to take philosophy in the senior year, and to do a considerable amount of work in history, English literature, and composition. The development of strong scholarship in English branches, indeed, was one of Mr. Durant's especial aims for the college. He was in love with his mother tongue and indignant at what he felt to be the unreasonable neglect of English in our higher institutions of learning, compared with the attention lavished upon foreign languages.

The department of rhetoric and essay, starting perforce in a day of small things, now coöperates with those of literature, history, and philosophy, and includes in its work the study of Anglo-Saxon. Prof. M. E. Stratton, M. A., of Oberlin, has been for several years at its head. Before coming to Wellesley, Miss Stratton had marked success in the organization and management of normal schools among the freedmen of the South, as well as in teaching English composition at her alma mater. She has since spent a year in special work under distinguished scholars in Oxford and Leipsic.

The methods of teaching history and English literature at Wellesley were introduced there by Miss Mary D. Sheldon, B. A., of Michigan University, author of the widely-known "Studies in General History," who was successively at the head of both departments in the formative years of the college. The German system which she assimilated, known as the seminary or laboratory method, simply regards the library as a laboratory in which the students are required to observe and compare the works of great literary artists, or the documents, the relationships of languages, the maps, coins, and other antiquarian remains which form the original sources of history. These independent studies are corrected and systematized in the discussions of the class room, and by the lectures and suggestions of the teacher; and the results are pre-

served in note books. Thus each student literally makes her own textbook. Miss Sheldon (now Mrs. Earl Barnes) was succeeded in the chair of history by Miss Alice E. Freeman, who enthusiastically followed the lines marked out by her fellow collegian. The present head of the department is Prof. Katharine Coman, PH. B., also of Michigan University, who is imbued with the same spirit, and has added to her naturally fine qualifications by much private study at home and abroad. The development of a like method in English literature has been for several years in the hands of Prof. Louise M. Hodgkins, M. A. A graduate of Mrs. Cole's school at Ipswich, of Wilbraham Academy, and Lawrence University, and an experienced teacher, Miss Hodgkins has broadened her literary culture by 2 years in Europe and by persistent private study. Her department offers unusually varied and extended courses, and is one of the most popular in the college.

The library at Wellesley was intended from the first to play a leading part in the education of the students. Mr. Durant, who was a graduate of Harvard, believed that he learned more from his work among the books there than from all the personal instruction he received. He was therefore eager that the Wellesley students should have a supreme interest in their library; and, with a self-sacrifice which only a book lover can appreciate, gave up his own choice private collection, amounting to about 9,000 volumes, to be the nucleus of that at the college. He also made large and repeated additions to it during the rest of his life; and it has been endowed by Prof. E. N. Horsford, of Cambridge. It now numbers 34,000 volumes, which are catalogued according to the Dewey system, thereby greatly increasing their efficiency.

The department of philosophy was built up by its present head, Prof. A. E. Morgan, M. A., one of the most original thinkers and best educated scholars in the faculty. She was led into this line of study by her teaching of language in the preparatory school connected with Oberlin College, her alma mater, and grew up in the strenuous days of the anti-slavery agitation there, which left her with clear views of personality, the freedom of the will, responsibility, etc. She is a daughter of Prof. John Morgan, of Oberlin, one of the three men whom Williams College delights to honor, and received very fine and full training in her chosen specialty from her father and his distinguished pupil, President James H. Fairchild. She afterwards taught for several years at Oberlin and Vassar, and has since spent 2 years in European study and travel. Her department affords courses in logic, metaphysics, speculative philosophy, ethics and moral philosophy, theism, and the history of philosophy and religions.

Returning to the early students at Wellesley, we find among them, besides members of the regular collegiate and preparatory grades, a third and important class. It was a leading purpose of the founders to give peculiar advantages to young women who wished to prepare themselves to teach. This design found one of its best expressions in a

special provision for candidates who had already been engaged in teaching, but who wished to qualify themselves for higher positions by advanced work in one or more particular directions. Such persons were received from the beginning with marked favor; but in 1878 they were organized into a department into which they have been received ever since that time without examination. This is, however, in no sense a normal department; and there never has been any such at Wellesley. The young women in question were allowed simply to elect their own lines of study from the regular curriculum (subject to the approval of the faculty, which was required for all the students), without regard to the limitations of arrangement in the collegiate course. These earnest women, usually older in years and more mature in character than the rest, have formed always one of the most valuable and respected elements in the institution; but the rapid increase in the number of applicants made their accommodation for some time a constantly growing problem. At last, in 1879, came the gift from Mr. C. B. Dana of a large boarding house in the village of Wellesley. It was christened Dana Hall, and was used for the next 2 years as a home for the teacher specials, as they were called, thus relieving the pressure at headquarters.

In the mean time the trustees were rejoicing over the receipt of \$100,000 from Mrs. Valeria G. Stone, of Malden, for an additional building. It was to be called Stone Hall, and to be put to such uses as, in the judgment of the trustees, the needs of the college should require. But it was always to be considered as "sacredly consecrated to the promotion of a truly Christian education, and the development of Christian character and life." Stone Hall was erected in 1880 on a commanding hill in the college grounds. It was opened in 1881, and has been used largely for the teacher-specials, accommodating about a hundred persons. It also afforded a welcome opportunity to provide more space for the department of botany, which had been much cramped up to that time. All the instruction in this department is now given at Stone Hall, where it has a large laboratory for the work in morphology, besides two smaller ones for more advanced study, and a fourth for the preparation of specimens. It has a fine illustrative collection, besides its excellent equipment of microscopes and other apparatus.

Aside from the classes of students already described, Wellesley has always had more or less special students who have not been teachers. Young women of this class, however, receive very little encouragement, and their number is constantly lessening under the pressure of applications from candidates for the regular course, to whom, with the teacher-specials, the preference is given.

A few other points should be noted in the earlier history of the college. One of these is the establishment in 1877 of the board of visitors, consisting of persons not otherwise connected with the institution, but usually eminent in educational matters, who aid the trustees by examining from time to time the methods of government and instruc-

tion, and making recommendation thereupon. Their number has since been fixed at 20. Some of the truest benefactors of the college have served it in this capacity. Preëminent among them is the president of the board, Prof. E. N. Horsford, of Cambridge. A devoted friend of the founders, he has been second only to them in his contributions to Wellesley's material prosperity, while he has conferred many benefits upon the faculty and students which only a rare and thoughtful kindness could have conceived. Several of the trustees also have first been members of the board of visitors.

A second point is the formation of the Students' Aid Society, with Mrs. Durant as treasurer, in 1878. This is an organization of ladies, whose object is to help poor and deserving young women to pursue their education at Wellesley by loans or gifts of money. It has met with much success, and the fact that one-third of all its loans has been returned already is a proof of its wisdom in the choice of recipients. Indeed, it is a well-known fact that the college owes much of its finest scholarship and noblest Christian character to the magic wand of this society.

Another means of giving aid was the establishment in 1878-79 of the Teachers' Registry. All Wellesley students in good standing, who wish to secure places as teachers, are allowed free of charge to register their names, qualifications, and preferences. These are kept with care, and consulted by persons seeking instructors for a great variety of positions. The arrangement is invaluable to the alumne and teacher-specials.

The first period of the crowded history of Wellesley College ends with Mr. Durant's death in October, 1881. It remains to speak of his unique attitude towards the institution during that time. First, it can not be too distinctly stated that his purpose in founding and guiding it was absolutely unselfish. "The college belongs to God," he said, "not to me." It was to be in no sense a monument to himself. His name does not appear in its charter. He would not allow it to be called after him, nor would he even permit a picture or bust of himself to be placed in one of its public rooms. The only office which he assumed in connection with it was that of treasurer of the board of trustees. Yet he was its real executive head. He gave up to it all the last years of his life. He identified himself with all its interests—intellectual, religious, domestic, financial. He watched over the daily life of its faculty and students with a fatherly enthusiasm that never tired. The personal affection of Mr. and Mrs. Durant has resulted, especially among the earlier alumne of Wellesley, in a sense of daughterhood to the college that we believe to be stronger and more genuine than that usually felt by the graduates of similar institutions, and the ideal of the founders, enforced by their eloquent words and sincere example, receives increasing allegiance as the ideal of the growing college. At Mr. Durant's death his place on the board of trustees fell to Mrs. Durant, who there-



STONE HALL.



after assumed, with an increased devotion and an ability which can hardly be exaggerated, her husband's duties there as well as her own. Like him in modesty, she stands in the background of the institution where she is yet the actual alma mater.

Toward the close of the year 1881, the earnest and faithful president, Miss Howard, who had long been in delicate health, was granted an extended leave of absence; and Miss Alice E. Freeman, professor of history, was made vice-president. It speaks volumes for Mr. Durant's insight into character that he had perceived the possibilities of this quiet, fragile, comparatively unknown girl of 26 years, and just before his death had recommended her for advancement in the college. Yet her sudden call to the head of its government, in the critical period which followed, was felt to be a doubtful experiment; and when Miss Howard permanently resigned her position, early in the following year, conjecture ran high as to her successor. Miss Freeman, however, displayed such maturity of mind, such a grasp of the situation, and such rare executive talent, that the trustees gladly accorded her the presidency. She entered upon her unexampled career in that capacity in September, 1882.

Alice Elvira Freeman was the daughter of a physician, and was born in a quiet country town in New York State. An aspiring girl, she prepared for the college course at the University of Michigan, where she took her first degree. (Her degree of PH. D. was conferred by her alma mater in 1883, as a tribute to her brilliant success at Wellesley.) Her life at Ann Arbor, where she was "one of a handful of girls among hundreds of young men," fostered decision and perseverance, and gave her wide-awake ideas on the collegiate education and government of women. The helpful part which she took in the Christian association there, and in aiding the growth of a young and struggling church, fitted her in some degree for the religious leadership of the Wellesley students. She taught for a short time in the West before assuming her professorship of history; but it is to inborn power, rather than to the lessons of experience, that we must attribute her unequalled success.

Before Mr. Durant died the college had ceased to admit new preparatory students; and by the time Miss Freeman entered upon her duties as president, the whole preparatory department had been dropped. Thus the institution had taken the greatest step in its intellectual progress, and was now ready to give itself wholly to its proper work. The change had also a second important effect; a freer government followed the leap in scholarship. The lower grade, by bringing in a large proportion of young and immature girls, occasioned a strictness of discipline which was not needed for the collegiate classes. Since it was abolished, however, many restraints have been laid aside, and it has been the tendency of the faculty to throw the control more and more upon the students themselves—a course which has been abundantly justified by its results.

The new president, coming from the first university in America which opened its doors to women, with the progressive ideas she had there imbibed, was in the heartiest accord with the changed condition of affairs. She brought the large hopefulness of the West and the breezy enthusiasm of youth into the intense atmosphere of the New England college. Her administration had four marked features: (1) intellect, (2) organization, (3) enlargement, (4) reputation.

First. Not only did Miss Freeman insist upon strong scholarship in the faculty, but under her leadership the intellectual grade of the students, now firmly based upon collegiate work alone, was raised by increased strictness in the requirements for admission, by obliging all special students who had not been teachers to pass the entrance examinations for freshmen, by especial attention to preparatory schools, by the simplification of courses and regulation of degrees, and by the pressure of personal influence in the daily life of the place.

Miss Freeman's development of secondary schools was one of her greatest services to Wellesley. In September, 1881, the Misses Eastman, who had leased Dana Hall, had opened there a private school to fit girls for the college, thus affording it, as has been well suggested, all the advantages of the discarded preparatory department without any of its drawbacks. The Dana Hall School has been a pronounced success from the first, and has made rapid strides in size and reputation. Into this nursery of the college Miss Freeman introduced a system of inspection, through which its class rooms are visited and its merits judged by a committee of the faculty. The resulting coöperation between the instructors of the two institutions is of much value. The new president was empowered also to look into the condition of secondary schools in general. It was largely as a result of her investigations that the Wellesley Preparatory School in Philadelphia was opened, in 1884, and that other similar schools have sprung up in different parts of the country. There are now about fourteen of these feeders of the college, besides other schools which offer preparation for it as one department of their work. All are carefully inspected; many are officered largely by alumnae of Wellesley, or by women who have studied there as teacher specials, whose familiarity with the standards and methods of the parent institution gives them peculiar aptitude for their duties.

It is through firm control of the secondary schools that the college is able to maintain with success its decision of 1880, to admit candidates to the freshman class on the certificates of the teachers who fitted them. This course is guarded by stringent rules, demanding thorough examination by the preparatory teachers, within fifteen months before entrance, on every subject included in the admission requirements, and continuing the right of certification to any school only on condition that the candidates whom it sends prove satisfactory. The advantages of such a system are obvious. The student is treated more justly, by being examined under familiar conditions by instructors whose methods she

understands; and she is given a most important opportunity for rest and freedom from worry before beginning her advanced work, through the permission to be examined a year beforehand.

The simplification of the courses of study, and the regulation of degrees, was another most important achievement. Wellesley has never availed itself in full of the rights granted it in this direction by the State legislature. It has never conferred an honorary degree. But "when the first class was graduated in 1879, and for the 4 years following, any student who successfully completed any one of the *seven courses* then offered was eligible to the degree of bachelor of arts; and the corresponding master's degree was offered for graduate work of 2 or 3 years. These various courses for honors in classics, in modern languages, in mathematics, in science, etc., made a clumsy machine. The first degree in arts was indefinite in meaning, and might represent a small amount of academic work done. It was therefore announced in 1883 that either one of the two degrees was offered for 4 or 5 years of undergraduate study—for the regular classical course based on Greek, Latin, and mathematics, with a certain number of electives, the degree bachelor of arts; for the so-called scientific course, fully equal to the other in severity, but substituting modern languages and advanced mathematics for Greek and some Latin, the degree bachelor of science. The title bachelor of music, first offered in 1882, has not yet been granted, and is promised to those only who complete the musical course with unusual success. Diplomas from the schools of art and music do not confer degrees." Graduate work at Wellesley began in the fall of 1879, with the return of a few members of the first class. It is strongly encouraged by the college government, among its own alumnae and those of other institutions of equal rank, both with and without reference to a second degree. Candidates for the master's degree are required to hold the corresponding first degree, to have completed 2 full years of study under the direction of a special committee of the faculty, and to present a satisfactory thesis or examination thereupon. One of these years must be spent in residence, unless the students are Wellesley alumnae, who are allowed as an alternative to receive other instruction specially approved by the faculty, or to offer the result of 3 years nonresident study. There were 24 young women doing graduate work in 1888-89.

Second. In the earlier years of the college, all questions of government and instruction which did not fall within the province of the trustees were brought before the whole faculty. Under Miss Freeman, however, the academic council was established, consisting of the president, professors, and associate professors. This body legislates chiefly upon matters which concern the intellectual life of the students, and its recommendations are received by the trustees with especial consideration. Details of discipline and other routine administration are decided by the general faculty, which consists of all the instructors of every grade, including the members of the academic council. Subjects which require

periodical attention are largely in the hands of special committees of the faculty, including the board of examiners, the board of advisers, the schedule and library committees, committees on preparatory schools, on graduate instruction, and on the expenditure of the scientific fund. The board of advisers is a feature peculiar to Wellesley. All students are required to obtain the approval of this body in electing their courses of study. Such a system has an obvious tendency to maintain a high intellectual standard among the students, while at the same time it guards their health, by vetoing plans that involve overwork; and it is an additional link between the faculty and those whom they teach.

Fifteen departments were established in the college, as follows: Greek, Latin, mathematics, physics and physical astronomy, chemistry and mineralogy, botany, zoölogy, history, mental and moral philosophy, English language, rhetoric and essay writing, English literature, German language and literature, French language and literature, music, and art. These departments were much systematized during Miss Freeman's administration.

Fraülein Carla Wenckebach, a graduate of the Normal College at Hanover, and a teacher of wide experience in Europe and our own country, was called to the chair of German. She is the author of four German text-books, which form the basis for the lower work in her department, while the advanced classes are conducted on the lecture system of the German universities. The work in French was reorganized, and the chair given to Prof. Rosalie Sée, B. S., of the Université de France, who came to Wellesley after 5 years' control of the corresponding department at Vassar. Italian and Spanish were added to the list of electives in modern languages.

Important changes were made in Bible study also. This has always formed a part of the course of every student at Wellesley. But formerly the preparation of lessons was not enforced; there were no examinations; and the degree of responsiveness among the classes varied like that in an ordinary Sunday school, where the same voluntary method obtains. The stress laid upon the subject by the founders, and illustrative lectures by eminent divines, were not sufficient to bring about the desired result. But since 1882, all students have been required to give 2 hours a week to Bible recitations, which are put upon precisely the same basis as their other classes. These are under the guidance of a special committee, and are conducted by 20 instructors from different departments. Great improvements have been made in the regular course of study, from the Old and New Testaments, which is laid out for the 4 college years. It is brought into its proper relation with the courses in ethics; students are held responsible for thorough preparation of lessons, and careful examinations are given. This method has succeeded much better than the former one, and its results are of a decidedly higher order. Elective courses in the Greek and

Hebrew Testaments now afford opportunities for advanced study in the same direction.

Another important step was taken in reorganizing the department of physical culture. The college had from the outset paid careful attention to the health of its students, not only by furnishing them hygienic conditions of living and a resident physician, but by encouraging them in sensible physical exercise. A large gymnasium had been provided and plentifully supplied with light apparatus, and gymnastic classes had been a regular feature of the institution. Exercise out of doors had been required for at least an hour a day, and the facilities for walking, boating, skating, tennis, etc., had been pressed upon the attention of the students, and appreciated by many of them. In 1882-83, however, the gymnasium was refitted under the superintendence of Dr. D. A. Sargent, of Harvard University, with apparatus selected by him for the scientific development of the human body. Its directorship was given to Miss Lucile E. Hill, an able and enthusiastic pupil of Dr. Sargent and others, who began systematically to examine the young women, and to assign to them such work as they severally needed. The gymnastic classes were thus rearranged upon an exact basis; and the good effects of the new departure were not slow in appearing. Miss Hill has striven earnestly also to increase the interest in athletic sports, and has been, in a large measure, successful, as is shown in the tennis association and class crews. Another achievement is the tabulation of the physical statistics of Wellesley. By means of their careful examinations, Miss Hill and her assistant are able to compare the health of any student on entering the college with her health at graduation, and to compare the conditions of those who take regular exercise and those who do not. In an address to the alumnae, given in June, 1888, Miss Hill announced that every member of that year's class who had taken proper physical exercise throughout the course showed a definite improvement in health. It is easy to see the extreme value of these investigations in leading toward the settlement of a much-vexed question as to the higher education of women. The progress at Wellesley, however, is seriously impeded by the lack of room. Less than half the total number of students can be trained in the gymnasium; and a new building, devoted especially to athletics, is much needed.

Third. As has been said, the institution was planned in the beginning for 300 students and 30 teachers. The college proper, or the main building, as it is now called, was amply sufficient for them. But the numbers have increased so fast that the problem of providing for extra candidates has been one of the Gordian knots of the management year after year. In 1882-83 there were 485 students, while the faculty had increased to 50 resident members. Stone Hall had been in operation a year. Waban Cottage, a house outside the grounds, but belonging to Mr. Durant's estate, had been pressed into the service. Places for a few students had been found at private houses in the village. Some

space had been gained at the main building, and the department of music had been given a generous home, by the erection of the School of Music. This was built by Mr. and Mrs. Durant, and opened for use in May, 1881. It is a handsome brick structure, containing 38 music rooms for lessons and practice, besides a hall for choral classes and concerts. The school of music now numbers 12 persons in its faculty, and provides for the teaching of vocal culture, harmony, piano, organ, violin, and guitar. Its director is Prof. Junius W. Hill, who is well known among Boston musicians for his ability and sound methods of teaching.

In the fall when Miss Freeman entered upon her duties as president, Simpson Cottage was opened as an additional home for students. It is a large Queen Anne house, given by the late Mr. Michael H. Simpson, of Boston, one of the trustees, in memory of his wife, who also had been a trustee and warm friend of the institution. It was designed especially for girls in delicate health, who were not fitted to endure the wear and tear of life in a large building; a college instructor was put at its head; and places in its happy family were eagerly sought.

But the number continued to increase. A passage from the new president's first annual report to the trustees states the situation plainly and is a specimen of the yearly appeal:

We have now a hundred names more than we can receive. Judging from the number of applications between June and September last year, we shall be obliged to turn away many more desirable candidates before September. The teacher-students and specials are those to be last admitted, and yet some of our best, most enthusiastic, and finished work is done by these specialists. * * * In case funds can not be provided to enlarge our borders, is it better to exclude them entirely, and to receive only candidates for degrees; or to make still heavier requirements for admission; or to limit the numbers in the freshman class?

In 1885-86, the decennial year of the college, in view of the urgent need of further accommodations and the great success of the cottage system, subscriptions were collected among the faculty, students, and alumnae for a new building, which was to be called the Decennial Cottage. The class of '86, through the generosity of Professor Horsford, its honorary member, contributed \$5,000 to this object, and furnished a suite of rooms in the cottage for the president. It was opened in the spring of 1886, and finally called Norumbega, in compliment to Professor Horsford.

In 1887 a large boarding house in the village, which had been bought by Mrs. Durant and Mr. Hunnewell, of Wellesley, and remodeled, was opened to students under the name of The Eliot.¹

Fourth. While the college was thus gaining in numbers, organization, and intellectual rank, it was also being drawn into closer relations with the general and the educational public. Situated only 15 miles from Boston, it has always enjoyed many of the privileges of its great neighbor. Faculty and students have gone to the city on errands of

¹And in the following year a new cottage was completed, which Mrs. Durant had built and named The Freeman.

culture and recreation. Several of the faculty have done advanced work at Cambridge with the aid of Harvard professors. In particular, a system of lectures and concerts, given by eminent scholars and musicians from Boston and elsewhere, was begun in the opening year, and has been continued ever since. (In 1887-88, for example, 76 such entertainments were given.) The trustees and other early friends of the college were often persons of high social standing, and by their visits and hospitalities had formed a very agreeable circle of acquaintances for the faculty. But the exalted modesty of Mr. and Mrs. Durant, as well as their marked independence, had kept them from trumpeting the praises of the institution, though they certainly wished its merits known, and though its doors were always open for inspection by educational people. Miss Freeman's relation to the college, however, did not demand such reserve; she saw that it ought to have general recognition, and that it needed general aid; happy speech-making was one of her peculiar gifts, and she used it effectively for Wellesley. By masterly addresses in different parts of the country, by hearty coöperation with other educators, by frequent receptions at the college itself, she strengthened its reputation, multiplied its friends, and widened its inner social life. Especially cordial relations came to exist between Wellesley and Cambridge, which found one emphatic expression in December, 1887, in the marriage of Miss Freeman to Prof. George Herbert Palmer, of Harvard University.

The sympathetic alarm for Wellesley, which was so widely expressed at the resignation of its beloved president, arose partly from a just estimate of her very great services to the college, and partly from ignorance of the other fine executive material in the faculty. Miss Helen A. Shafer, M. A., professor of mathematics, was appointed acting president, and entered upon her new duties in January, 1888.

Miss Shafer was graduated from Oberlin in 1863. Her associates there remember her "marked superiority in mathematics," as well as her exceptionally fine essays. She afterwards taught in the St. Louis high school, where her mathematical work won her an enviable reputation among such judges as Dr. William T. Harris and Prof. G. H. Howison. She came to Wellesley in 1876, and brought up a department which is unexcelled in the college for high standards and scholarly results. This was especially difficult, as it was necessary to overcome the common schoolgirl aversion to the subject and the poor preparation which is so often its consequence. But the admission requirements in mathematics at Wellesley are now higher than those at Harvard, and the advanced courses are often elected and pursued with great enthusiasm. Miss Freeman's report of 1883 remarks:

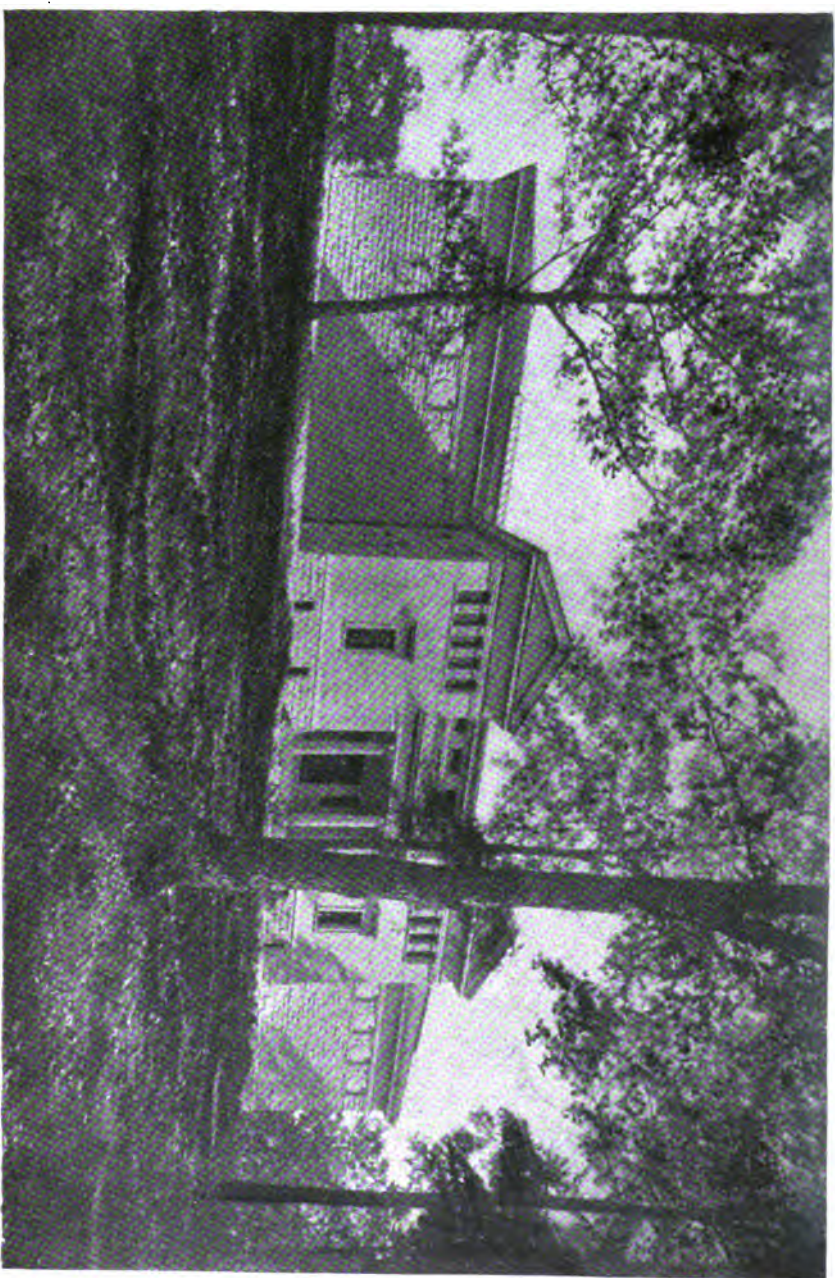
I know of no American college where more intelligent or advanced undergraduate work has been undertaken in mathematics than that accomplished by those seniors who have been reading Dostor's Determinants, Howison's Analytics of Three Dimensions, Watson's Theoretical Astronomy, and calculating the orbit of the new comet from data obtained at the Harvard Observatory.

Among the alumnae, who knew her character and ability and remembered her superb classroom work, Miss Shafer's appointment was received with genuine satisfaction. Like her predecessor, she was made president after two terms of probation. She has therefore completed the first year of her full administration, which she has carried on along lines similar to those pursued by Miss Freeman. She has shown herself not only a just, Christian woman and a specialist of rare talent, but a strong executive head; and the college has never been so flourishing as it is under her management to-day.

The chair of mathematics is now filled by Prof. Ellen Hayes, B. A., of Oberlin. Miss Hayes was for some years Miss Shafer's first assistant, and it is pleasant to remember that she, like Miss Freeman, was especially recommended by Mr. Durant for advancement. In 1888, while spending a few months at the Leander McCormick Observatory in Virginia, she determined a definitive orbit of the minor planet 267; and her work in this connection won repute in Germany. The general high standard of the department is fully sustained under her management.

Important changes have recently been made in the art department, which is under the charge of Miss Ida Bothe, a Boston painter of well-known talent and exhaustively thorough training. A magnificent new art building has been erected, through the generosity of the late Mr. I. D. Farnsworth, of Boston, a friend of Mr. and Mrs. Durant, who left a legacy of \$100,000 for the purpose. It is just completed, and will be opened formally in October. It is built of a light freestone, in pure early Greek style, and contains spacious galleries and studios, finished with the highest regard to beauty of material, color, and form. A popular course in the history of art is under the charge of Prof. E. H. Denio, who was formerly at the head of the German department. Large rooms in the new building are set apart as laboratories; that is, galleries containing copies of the masterpieces of painting and sculpture, which the students examine and compare. Their investigations are supplemented by lectures and references to the art library. Miss Denio has studied the laboratory method in Germany, where she has spent 5 years at different universities, part of that time attending the classes of Professor Springer at Leipsic. She received official notice from the latter institution that she was qualified for its degree of Ph. D., which yet it was too conservative to grant to a woman.

It remains to speak briefly of the present trustees, faculty, students, and alumnae. The number of the trustees is limited to 27, and includes the president of the college, *ex-officio*. It is required that all of them shall be members of Evangelical churches, but that a majority shall not be connected with any one religious denomination. They hold office without express limitation of time. The board consists of eminent educators, of leading divines, or of ladies and gentlemen who have been signal benefactors to the college and are permanently identi-



WELLESLEY COLLEGE—THE FARNSWORTH SCHOOL OF ART.

fied with its interests. The president is Dr. N. G. Clark, the well-known secretary of the American Board, while Mrs. Durant is the secretary and treasurer. Among the members are Dr. Howard Crosby, Dr. John Hall, Dr. Noah Porter, Hon. and Mrs. Wm. Claflin, Mr. H. E. Scudder, Mrs. H. B. Goodwin, and Mrs. Alice Freeman Palmer. The late lamented Dean Gray of Cambridge also was a trustee of Wellesley. Much of the detailed business of the board is done through the executive and finance committees.

The faculty now numbers 92. All the professors are ladies, with the exception of Prof. William H. Niles, of the Massachusetts Institute of Technology, who takes charge of the geological work, and Professor Hill of the School of Music. The generous supply of teachers has had one noteworthy effect in bringing nearly all the students into frequent social contact with their instructors, and thus influencing them intellectually and religiously. This was very thoroughly done at first, and although the great increase in the number of both parties and their distribution in scattered dwellings make the task harder and harder, it is still accomplished to an unusual extent. One effective means to this end is the coöperation of teachers and students on committees, in the College Christian Association for instance, and the Microscopical Society. The recitation divisions, also, are limited to about 30 pupils each, while in many cases they are much smaller, thus allowing the instructors to give careful attention to individuals. The growing tendency to intrust the students with their own government is shown in the new departure with regard to attendance at classes. Each student is "left to the free exercise of her judgment" in the matter, "so long as the absences number less than one-tenth of the possible number." She is required, however, to state the reason of each absence on a card which she furnishes to the instructor in charge of the class.

There were 677 students at Wellesley in the year 1888-89. The newcomers are still on the increase, and another cottage has just been completed. Social life is promoted by many organizations, religious, intellectual, and athletic, as well as in less defined ways. The college has been in the main true to its divine motto, "*non ministrari, sed ministrare*;" and its Christian association, its missionary society, its temperance society, are outgrowths of the Wellesley spirit of mutual helpfulness. The young women to whom so much is given are taught constantly that of them much will be required. They are encouraged to lend helping hands to their less favored sisters in Boston and the neighboring towns, as well as to coöperate heartily with foreign missionary work. There are three leading literary clubs, the Shakespeare Society, which is a branch of the London Shakespeare Society, and the Zeta Alpha and Phi Sigma, for general culture. There is a flourishing choral union, called the Beethoven Society, and an art society has lately been formed. Much benefit has been felt during the last year from the college paper, *The Wellesley Courant*. It has thus far differed from

most similar publications in being controlled jointly by the undergraduates, the alumnae, and the faculty, and has proved so valuable a means of expression and union that it is to be continued henceforth in magazine form and under a new name, *The Prelude*. Much of its success has been due to its first editor, Miss Katharine Lee Bates.

The alumnae are over five hundred in number, and their relations with their alma mater are most cordial and sympathetic. They meet annually at the college, and many of them are actively engaged in furthering its interests. The names of fourteen were included in the last list of its faculty, and one of them has recently been elected a member of the board of trustees. The great majority are teachers in preparatory and high schools. The Wellesley Preparatory School in Philadelphia was started under the management of the late Miss Elizabeth Root (of the class of '80), and is now in the charge of Miss Brittingham, a college teacher special. Miss Evelyn Hall (of the class of '79) has been for several years at the head of Northfield Seminary. Miss Leila McKee (of the class of '86) is principal of Oxford Seminary, the prosperous daughter of Mount Holyoke. Miss Ada Ayer (of the class of '80) is principal of Harcourt Place, Gambier, Ohio. The Misses Brann and Barstow (of the class of '83) have organized a flourishing preparatory school in Kansas City. But undoubtedly the ablest teacher and probably the strongest woman Wellesley has trained is Miss Katharine Lee Bates (of the class of '80), who took a leading part in the development of the Dana Hall School, and is now associate professor of English literature at the college. Her methods are unusually original and successful, and her influence over younger minds is phenomenal. She is beginning to be known to the public as the author of various short poems of true imaginative quality and large promise.

The class of '79 has given two of its leading members to the foreign missionary field, one of whom, Miss Gertrude Chandler, principal of the Girls' School in Battalagundu, South India, is at present in this country on leave of absence. Several more of the alumnae are engaged in foreign or domestic missions, one in Kobe, Japan, another in south Africa, others still in India, one among the poor of New York, others at Hampton and in kindred work among the freedmen of the South.

Seventy-eight of the alumnae are married. Prominent among these is Mrs. Louise McCoy North, M. A., of the class of '79, who before her marriage taught Greek with rare success at the college, and has since contributed scholarly articles on oriental subjects to *The Christian Union*. Several are physicians; among them Dr. Alice T. Hall, of the class of '81, now professor at the Woman's College, Baltimore; the librarian's profession has attracted some, and a few have pursued graduate courses simply from the love of knowledge. The most distinguished of the last sort is Mrs. Winnifred Edgerton Merrill (of the class of '83), now president of the association. In the year after her graduation she with great difficulty obtained permission to carry on her astronomical studies at

the observatory of Columbia College. By her brilliantly successful work she so far turned the tables upon that stronghold of conservatism that its trustees unanimously voted to confer upon her the degree of Ph. D. *cum laude*, and thereafter to grant that, as well as the degree in arts, to any woman who should present evidence of the required amount of work. This was one of the important steps which led to the founding of the new Barnard College, of which Mrs. Merrill was appointed a trustee.

The great prospects of Wellesley are seriously limited by lack of funds. The founders believed that its noble and practical object, when rightly known, would appeal with irresistible force to the patrons of education. They, therefore, made the beautiful grounds and buildings their main gift, leaving the bulk of the endowment, which is so essential to lasting prosperity, to come from those who should follow them; but this has not been clearly understood, and as a consequence the college has suffered. Its firm friend, Professor Horsford, has endowed the library, and twenty-six scholarships have been established; but these and a few minor gifts complete the tale of endowments, which are wholly inadequate to the needs of the institution. If plain living and high thinking are to be maintained there—unless one of the main objects of the founders is to be defeated, and Wellesley is to be turned over exclusively to the daughters of rich men, who can pay extravagant rates of board and tuition—aid must be brought from without. Endowments for the presidency and professorships, additional scholarships, a larger chapel and gymnasium, more cottages, and perhaps, beyond everything else, a general fund to be applied at the discretion of the trustees, are all needed.

BOSTON, *September 1, 1889.*

NOTE. Among the important movements at Wellesley since the above sketch was written, should be noted the steadily increasing interest in the course in pedagogics, which was begun in the year 1888-89 by the scholarly professor of German, Fraülein Carla Wenckebach. During the past year, a most interesting course in domestic science has been given by Miss Marion Talbot, M. A., of Boston University and the Massachusetts Institute of Technology. Miss Talbot's class has been taught to consider applied domestic science as the crown of all previous scientific work done by its members; the method has been strictly experimental; and the results are of very great practical usefulness. A noteworthy step has been taken with regard to Bible study, in appointing one person, Miss Sarah A. Emerson, formerly associate professor of Latin, to the general superintendence of all work in that direction. Wellesley congratulates herself also on the addition to her faculty of two valuable professors, Mrs. Julia J. Irvin, in the department of Greek, and as the head of the new department of philology, Prof. Helen L. Webster, Ph. D., the record of whose brilliant scholarship at home and abroad is well known to a large circle of educational people. Among other changes in the faculty is the resignation of three heads of departments, those of Art, French, and English literature. Prof. Louis Ritter has assumed charge of the School of Art, with excellent results; and Miss Katharine Lee Bates, M. A., has just been appointed professor of English literature.

M. P. G.

CHAPTER XXII.

HISTORICAL SKETCH OF SMITH COLLEGE.

By LOUISE WALSTON.

Smith College, an institution for the higher education of woman, was founded in 1870 by Miss Sophia Smith, of Hatfield, Mass., who bequeathed about \$400,000 of her estate for that purpose. To this sum the town of Northampton added \$25,000 to comply with the conditions of her will concerning the site.

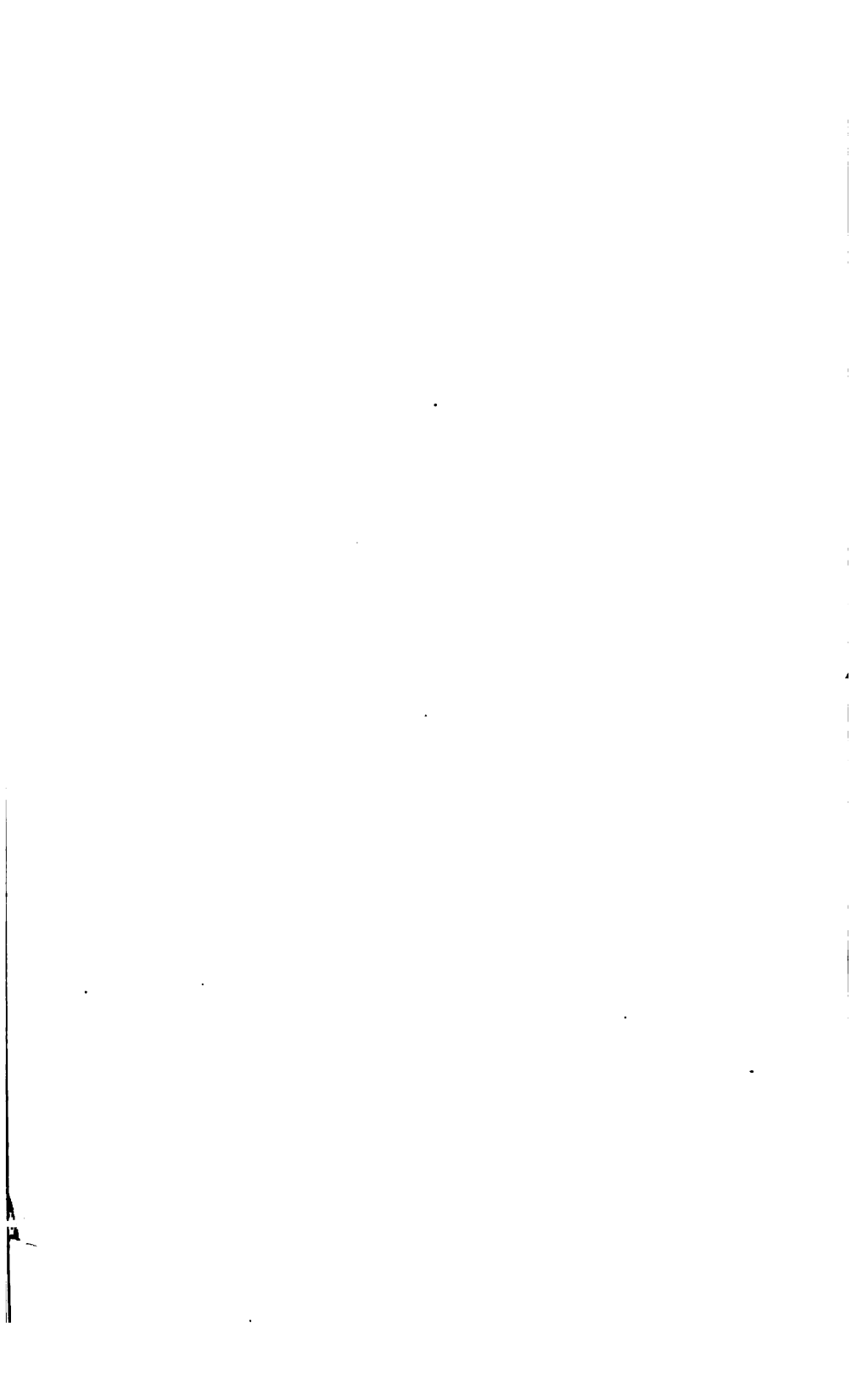
The design of the founder and trustees was not to add another school to the list of seminaries and academies then existing for young ladies, but to establish a college which should be more definitely a woman's college. They believed woman to be of a composite nature, possessed in the words of the founder, of "moral, æsthetic, and intellectual" propensities no less than of domestic leanings; and guiltless of theories concerning that distinctively modern branch of social cosmology known as the "sphere of woman," they ventured to found a college which should evolve, by natural processes, woman as she should be from woman as she is. They would make the requirements for admission substantially the same as at Harvard, Yale, or Amherst, and would secure to young women the culture and discipline equivalent to that offered to young men by our best New England colleges, but differing from them as a completely rounded womanhood differs from a perfect manhood. They would give to her strength without depriving her of her womanliness, and this not by cultivating her intellect alone, but by developing her many-sided nature in each of its various phases.

With this end in view Smith College was founded, and under the guidance of this principle incarnate in the person of the first and present president, L. Clarke Seelye, all the interests of the college have been fostered.

Accordingly, for the cultivation of the social and domestic side of woman's nature, the plan of comparatively small dwelling houses has been adopted. Of these there are six, the latest of which, the Wallace, has been erected within the last year; and two more are about to be constructed. These houses are entirely separate from the academic buildings; each has its kitchen, dining room, parlor, and bed rooms, and is located apart so that danger from fire is lessened, and at the same time free access is given to sunshine and air. The largest will accommodate 50, the smallest 21. Over each house a cultured and intelligent



SMITH COLLEGE—MAIN BUILDING.



woman presides, who feels it her mission not merely to provide food and lodging for the young women, but to create a home atmosphere and secure as far as possible the advantages of family life.

The social life at Smith College is an important factor. Care is taken to make students feel that the world is not bounded by college walls, and that life is lived in reality, not in books. Smith has her receptions, her societies, and afternoon teas. To these come men and women from the world outside, bringing with them an atmosphere of culture for which the vicinity has long been noted. Students are placed as much as possible in those positions in which the world will place them, and are measured at Smith as the world will measure them, not so much by what they know as by what they can do, not by intellectual attainment alone, but by the power this gives them to adapt themselves to the exigencies of actual life. The large-browed silent woman for whose resources the world never feels a demand, or that type of woman who is apparently well equipped but knows not how to use her knowledge, is but little cherished at Smith. Intellectual gymnastics are held to be but a part of woman's education and must take their place coördinate with integrity, refinement, and general culture.

The first academic building was erected in 1875, and since that time the college buildings have multiplied with encouraging rapidity. In 1881 Music Hall and The Hilyer Art Gallery were erected, and the spring of 1886 found completed the Lilly Hall of Science. These departments of music and art are not to be regarded as mere annexes to the college proper, but are parts of it. They are held to be necessary media for the cultivation of the æsthetic and spiritual nature of woman and as essential to the attainment of a perfect development as the academic department or gymnasium. The courses in music and art are offered to students in the academic department as electives, and students of approved age and attainments can pursue them as specialties. Both in appliances and instruction these departments are unusually efficient. The art gallery contains an exceptionally fine collection of casts and of tastefully selected paintings, one corridor of engravings and an alcove of original drawings, given by the Century Company. The new studio, with its interesting studies, improved appliances, and northern light, occupies a large part of the second floor of the gallery. This is for the use of the perspective and life classes. The method of instruction here is in principle the same as that of the academic department. It is preëminently adapted to the individual. The pupil is placed before a cast and told to draw, and it is found that if she has not within herself resources with which to make a beginning, no impulse from without can be strong enough to supply the lack. Students are not crippled by help. The instructor furnishes incentives to effort, and aid by way of encouragement and criticism; to do more he feels is to undo. He can direct mind, but he can not make it.

The music school offers to students of the college a valuable course

of concerts. They are arranged with method, each bearing upon the other, sometimes with historical connection, again with regard to æsthetic values. Each concert is opened by a short lecture, intended to help the listener to intelligent appreciation.

The physical culture of the students is provided for by a gymnasium, and a specialist in that department, who prescribes exercises needful for each student. The old system of violent exercise has been superseded by the more quiet Swedish method. The slow, æsthetic movement is held to be a better means to the development of muscle, as well as to the cultivation of grace, than those movements which invigorated but did not correct. These exercises are accompanied by music, in waltz time. Experience shows that the æsthetic element introduced is an efficient means to that thorough enjoyment so essential to healthful gymnastics. As the college has grown the present gymnasium has become inadequate to the needs of the increasing numbers, and the new year looks forward to a gymnasium which will withstand an indefinite growth in membership.

The college is Christian in its aims, but undenominational in management and instruction. There is a chapel service held in the morning of week-days, and a vesper service, largely musical, on Sunday. There is no college church, and students attend churches in the city according to individual preference.

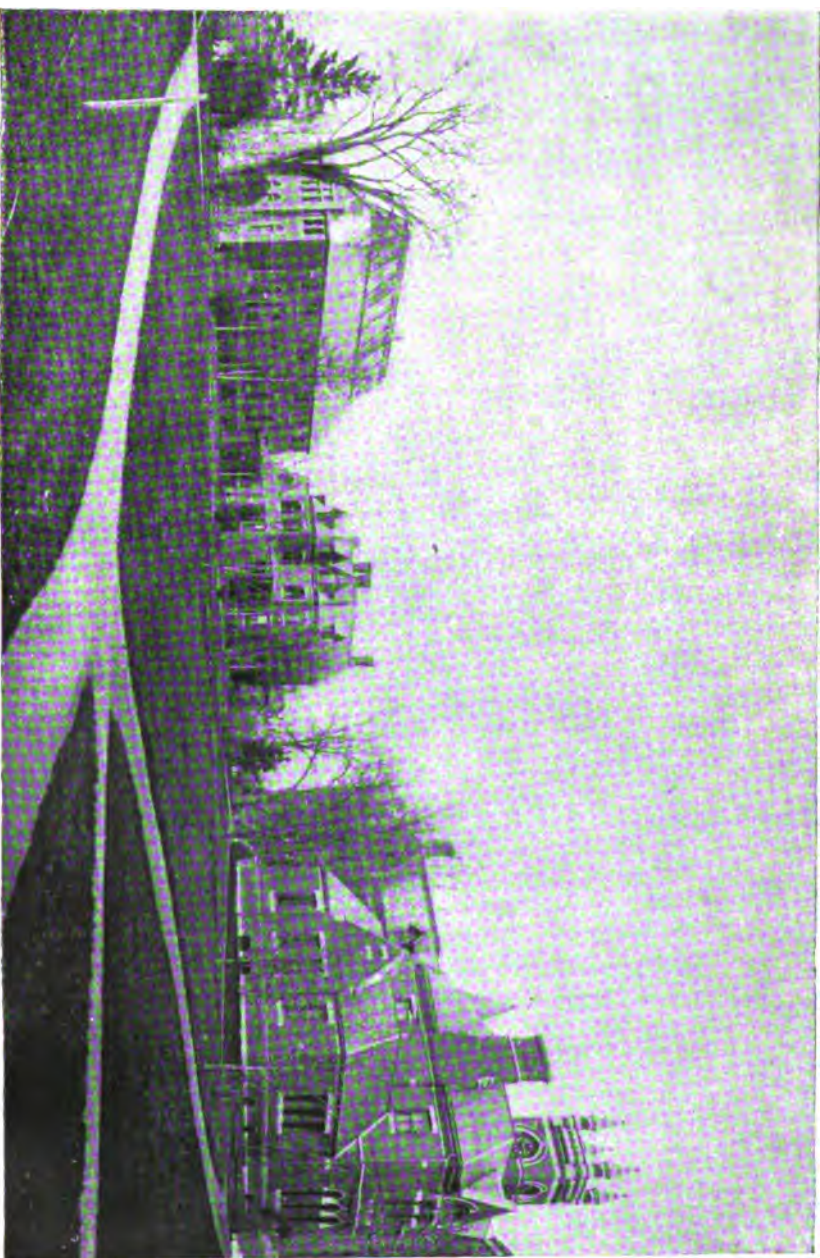
Although Smith is not coeducational, yet it is freed from the one-sidedness of some colleges for women by the presence of men in the faculty. The faculty, aside from lecturers and nonresident teachers, numbers 24, only half of whom are women. This not only secures breadth of treatment as well as delicacy of detail, but provides for both the inductive and deductive methods of teaching, which can be chosen by the student according to her aptitude and natural bent.¹

Another feature prominent at Smith, since it is held to be the main-spring to action in woman, is the presence of the personal element. This is found in the influence of members of the faculty, who as instructors in the conduct of recitations and as officers in charge of classes endeavor to make their formal relations subordinate to friendly interest.

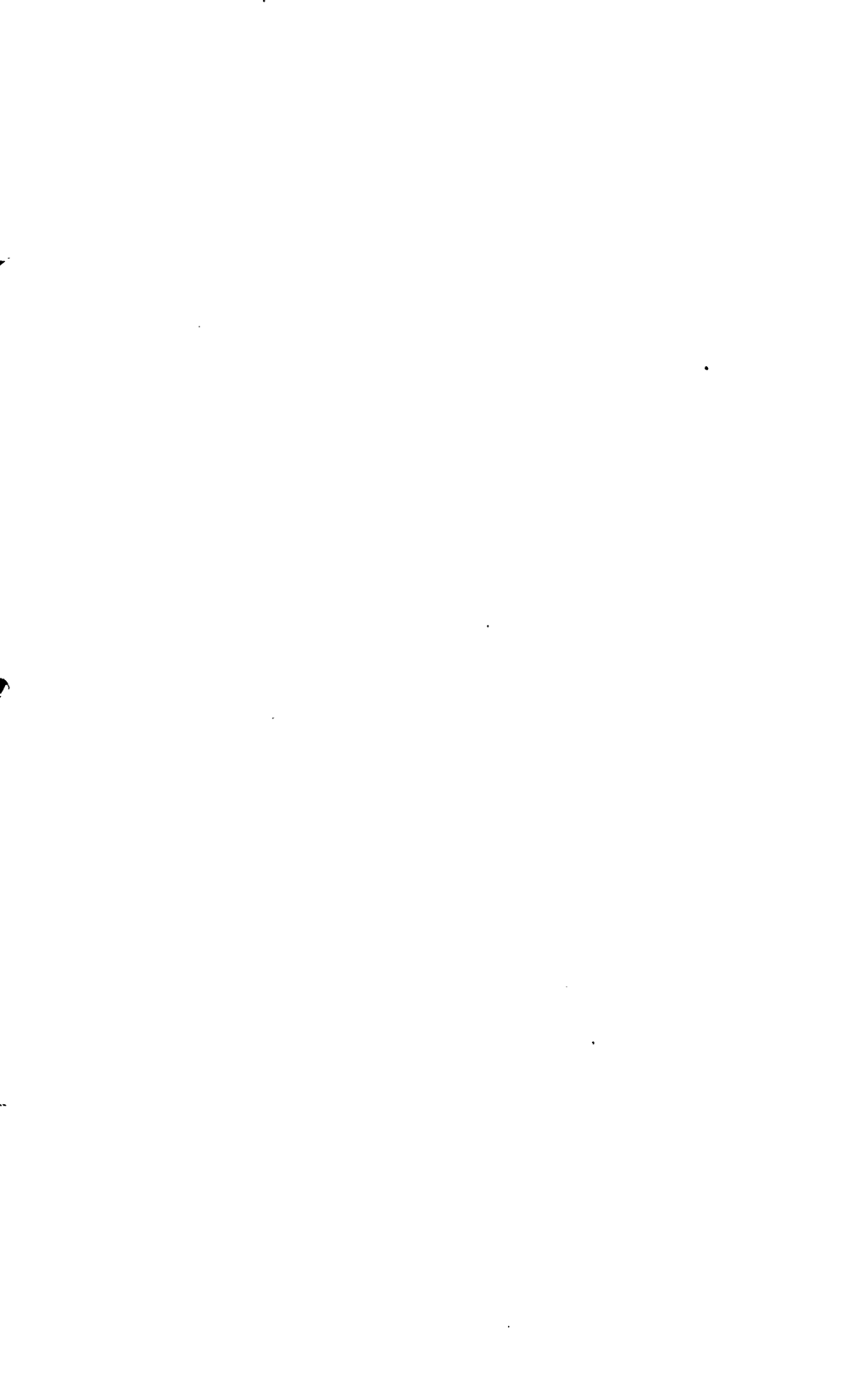
The general atmosphere of the college is one of freedom. Students are not challenged to disorder by rules nor so confounded by law as to identify principle with convention. The written code consists of one law, lights out at 10; the unwritten is that of every well-regulated community, and to the success of this method of discipline every year is a witness.

This freedom is not license. The system of attendance upon recitation at Smith is in this respect unique. It is distinctively a "no-cut" system. In the college market that commodity known as indulgences

¹ The circular of 1888-89 gives the number of students as 437; price of tuition for all students, \$100 per year; board, furnished rooms, heating and lighting, \$250 per year. Scholarships of \$100 have been established to assist meritorious students.



SMITH COLLEGE—MAIN BUILDING.





SMITH COLLEGE—GYMNASIUM.



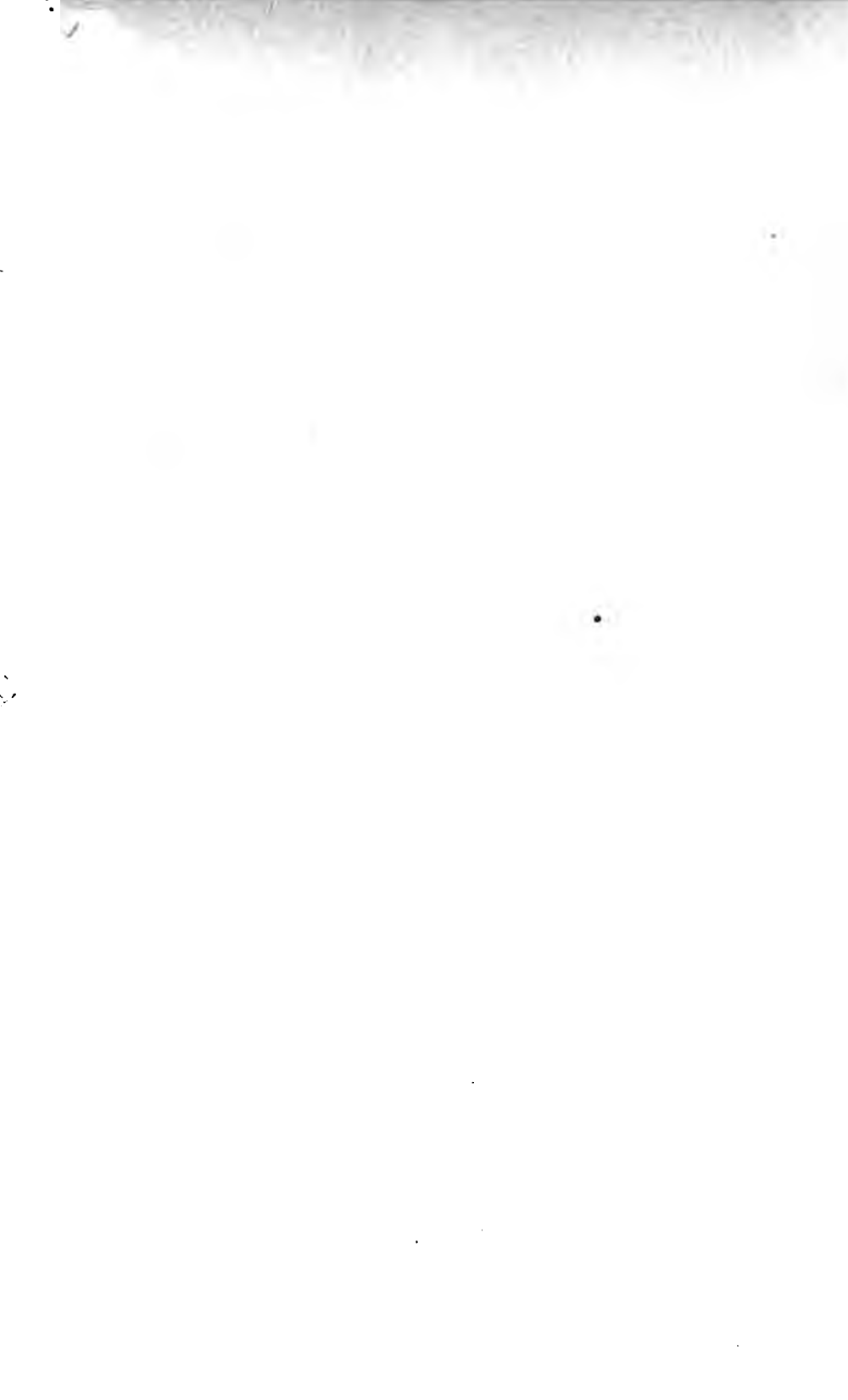
SMITH COLLEGE.

is not to be found, and no student is expected to absent herself from lecture or recitation except for good reasons, the validity of which, however, is left for her own conscience. Knowledge is proffered as a privilege and is so received. No inducement is offered by way of marks for unhealthful competition, prize contests of every description are discouraged, and the only caste-creating tributes of honor conferred are those which Honor herself tacitly confers.

There are at Smith two scientific, three dramatic, and one literary society. The scientific societies are designed for improvement and pleasure, the dramatic for pleasure and improvement. The Alpha Literary Society demands special mention. It aims to admit to its membership all students who attain a certain degree of proficiency in college work, and who possess marked literary abilities. Its meetings are held three times a term in the Alpha reading room. This room is made graceful and artistic by draperies, rugs, and easy chairs, and the presence of fancy work does not interfere with the reign of parliamentary law. The Alpha paper is read, and the rest of the programme varies with the originality of the different executive committees. The entertainment is, however, always literary in tone, and such as to best bring out the originality of the members. There are at Smith no secret societies.

There are various missionary societies and societies for the dispensing of charities. The latter are, for the most part, in behalf of such types of humanity as appeal most naturally to the sympathies of young women. Among them is one in behalf of the working girls of New York, and great interest is taken in the college settlement, which numbers among its best workers several graduates of the college. Not a little charity work is done by individual students, who earn money for the purpose by tutoring or mending, and thus help others while they themselves are unconsciously learning the value of money as well as avoiding the tendency which all college students have to become self-centered.

For some years Smith College gave only academic degrees to those who completed the so-called classical course, but in 1886 two additional courses of study were arranged—the literary and the scientific. The distinctive peculiarities of these courses in literature and science is the requirement of a greater amount of modern languages or of natural science instead of the classics or mathematics. Graduates from the literary course receive the degree of bachelor of letters; those of the scientific the degree of bachelor of science. The aim of all, however, is the same, and may be thus stated: “The college is not intended to fit women for a particular sphere or profession, but to perfect her intellect by the best methods which philosophy and experience can suggest, so that she may be better qualified to enjoy and do well her work in life, whatever that work may be.”





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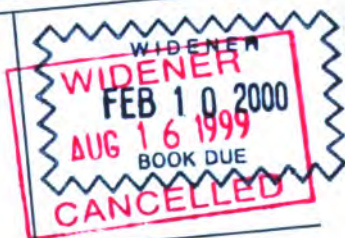
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